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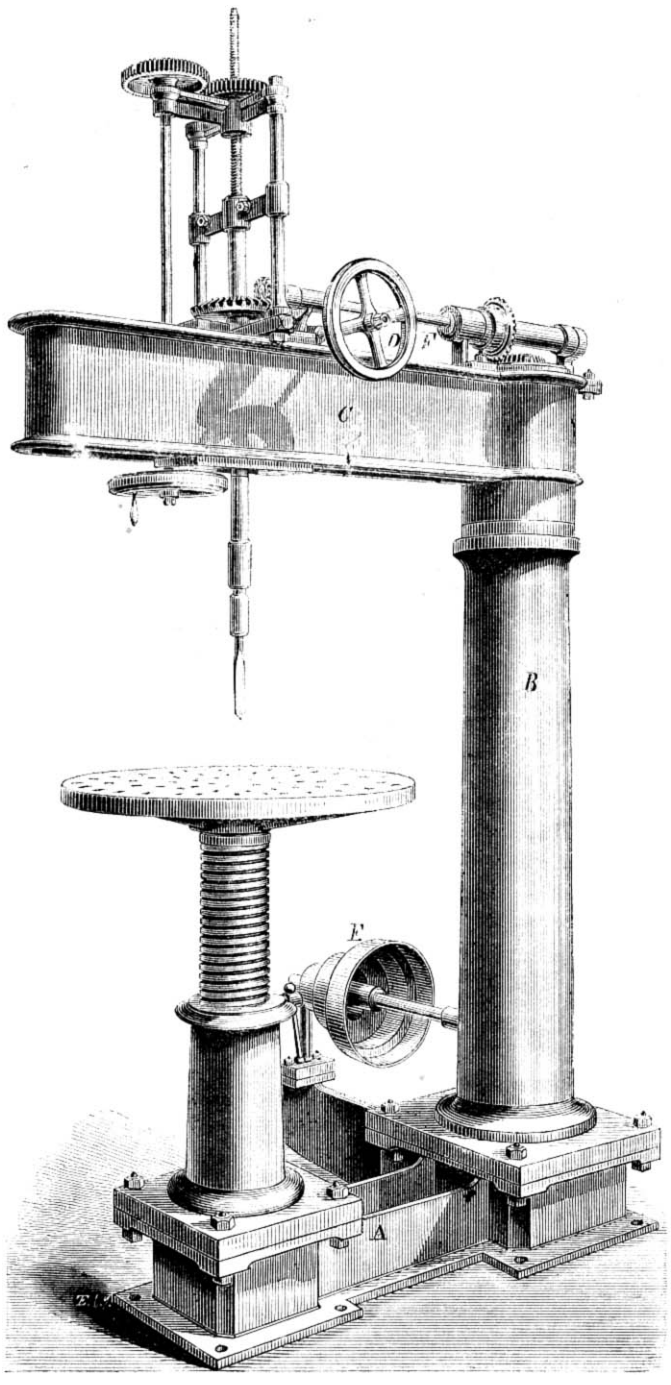
Improved Radial Drill Press.

There is no more indispensable machine in metal-working establishments than a good drill press; and a great deal of ingenuity can be shown in planning them so as to obtain the greatest possible efficiency for the least weight of metal and cost. The kind of work that has to be done under a drill press varies greatly even in shops where one article is manufactured; as, for instance, turbine wheels. One branch demanding long drills to reach past shoulders on the job, which prevent the spindle from being run down, and another requiring the table to be turned out of the way entirely so that the work may set on the floor, or still other jobs running from small holes to large ones. For these reasons it is desirable to have the machine well arranged to accommodate all classes, and we believe the necessary ends are combined in this one.

In detail it comprises a base, A—to be set in the floor, on a foundation of brick work—an upright column, B, and a radiating arm, C, fitted to a neck at the top of the column, and traversing freely in all directions. In this slides the head carrying the drill spindle, which is moved backward and upward by a rack (not shown in the engraving), with pinion and hand wheels, D, one of which is on each side of the machine. The power is derived from a countershaft overhead, a belt from which drives the horizontal shaft, E, passing through a bearing in the side of the column. From this the motion is communicated by two pairs of miter wheels and an upright shaft in the center of the column, to the shaft, F, passing through a sleeve or barrel running in bearings on top of the arm, and provided with a feather, to allow it to slide freely with the motion of the head. The drill spindle is driven by a pair of bevel wheels in the usual manner, and the head in which it runs, with the frame-work carrying the feed wheels and screw, slides within the arm, which is open from end to end and planed up on the bearing surfaces.

It will be seen that the arm or swing is allowed to traverse freely in all directions—the only interference being from the driving belt—and that there is secured besides a longitudinal motion of the drill within the arm. A large number of holes may thus be drilled in succession in the same surface, without moving the work; an advantage which will commend itself to machinists. It is especially useful in fitting up such work as steam cylinders, heads, and steam chests, which, by its means, can be drilled at one sitting instead of many, and has been approved and adopted, particularly in railroad and locomotive shops. The machine is provided with a horizontal table with screw and nut, for small work.



BARR & CO.'S RADIAL DRILL PRESS.

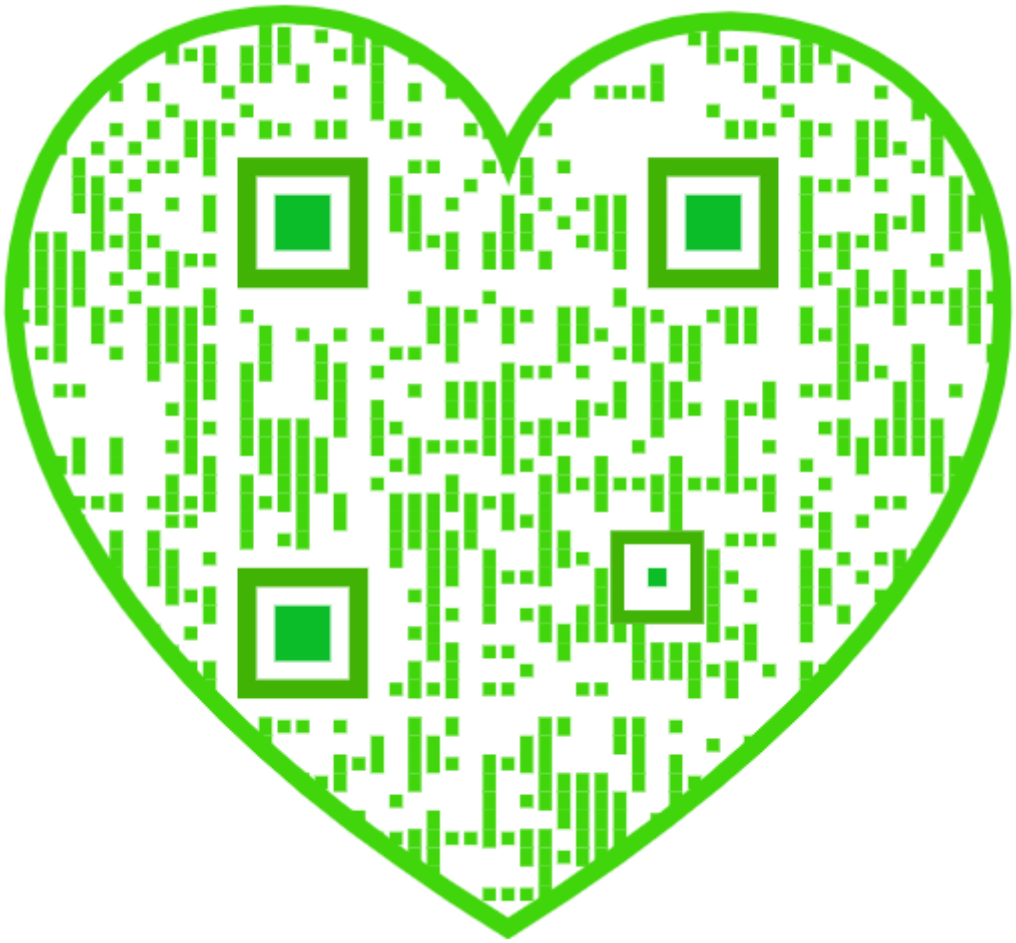
Manufactured by Robt. H. Barr & Co., machinists, Wilmington, Del., to whom all communications should be addressed.

THE steamship *Glasgow*, of the Inman line, was recently burned at sea. No lives were lost.

THE STORY OF THE MAN WHO FLEW.

The Chicago *Tribune* contains a letter from one Walter V. Collins, written at Minneapolis, Minnesota, giving an account of a modern Icarus, who flew by means of bladders, copper cylinders, parachutes, and kites with rope ladder tails. We print the portion of this letter which describes Mr. Smith, the flying man, and his apparatus, merely remarking with all deference to the names of the respectable citizens appended as witnesses to the feat, that the narrative has a very aerial sound.

"This morning at 11 o'clock, the hour appointed, we were promptly at Mr. Smith's store, and found him ready to start. At the door there stood two teams and wagons, one of which contained what I supposed to be a canvas tent, with poles, etc. In the other we took our seats. The party consisted of Mr. Smith and his clerk, James McLennan, Capt. Cobb and myself, Patrick Riley and Andrew Ward, the drivers; six in all. Mr. Smith was enveloped in a large linen duster, which quite concealed his person. During the ride he appeared rather serious and taciturn. In two hours we reached a point about twelve miles west of the city, and there stopped. The country was a rolling prairie, wholly uncultivated, and with no traveled road for several miles on either side. The canvas, etc., was taken out and spread upon the ground, and I found to my amazement that instead of a tent it was an immense kite, made of sail cloth, with a strong jointed frame. It was of the kind known as the 'house kite,' hexagon form, and when put together was twenty-five feet in length, thus containing an area of over 500 square feet. Its cord was about the thickness of my little finger, but of great strength, having been manufactured to order. The tail of the kite was merely a light rope ladder. Mr. Smith now threw off his linen duster, and I could scarcely avoid laughing at his extraordinary appearance. Beneath his arm pits, and extending around his body, there was a copper cylinder, a foot wide from top to bottom, and about two feet in diameter. His ordinary clothing had been replaced by a tight-fitting suit of ribbed cloth, made apparently all in one piece. Attached to his arms and body were a pair of webbed wings of strong material with a light framework of steel. When at rest, these wings (if I may so call them) hung loosely about him like a closed umbrella, but when his arms were raised they became extended and gave him an odd resemblance to the 'Green Monster' in the pantomime. Scores of ordinary bladders were fastened to the suit above-mentioned, and equally in every part. Some were placed close to the body, and others depended at various lengths, from one to three feet. From the mouth of each a hollow, flexible tube communicated with the cylinder. These, if extended, would consequently form a net-work of air tubes. I made these obs[redacted]s hastily, for Mr. Smith at [redacted]himself upon the rope ladd[redacted]ested that the kite, which h[redacted] set up on a slight elevation, should be raised. The Captain and myself called out together that he had forgotten his parachute; but he replied impatiently that he did not need it. We declared, however, that we would not permit so foolhardy an experiment unless this precaution were taken, and after a little parley he consented. A steady breeze was now blowing from the southeast. Riley and Ward took their place in the wagon beside the coil of rope; McLennan acted as driver while



Capt. Cobb and I remained on the ground as spectators. The horses were started into a gallop, and the kite rose, slowly and heavily, but steadily upwards. I glanced at my watch; it was twenty minutes past two o'clock. The kite continued to rise, with a slight swaying motion, higher and higher. It seemed as though the daring aeronaut must become sick and dizzy at his lofty hight. Suddenly I was startled by an exclamation from my companion, and noticed a dark object falling from the kite and fluttering slowly downwards. It was the parachute which Smith had thrown away! The persons in the wagon, which was now half a mile distant, did not seem to notice this occurrence. Obviously Smith's situation, if his invention should fail, had become one of appalling danger; since it is almost impossible to bring a kite to the ground without a violent and jerking lateral motion. It seemed equally perilous to stop or to proceed. Trembling with anxiety, we watched with straining eyes his fast-receding form. I had an excellent field glass, which gave me a perfect view of his every motion. And now we noted that both the bladders and the wings had begun to expand. Higher he rose, but we could detect in his attitude no sign of doubt or trepidation. The bladders soon became distended so as to almost hide the man from view. He had now reached an elevation, as near as I could judge, of 1,200 to 1,500 feet, or about a quarter of a mile. He now detached his arms from the ladder, his feet remaining upon it, and waved the wings upward and downward, as if to try them. For an instant he stood thus, and then, relinquishing all support, he sprang off into the empty air! For a moment my heart stood still. I held my breath, expecting to see him dashed to the earth. But he did not fall; he did not even seem to tend downwards. His wings played with great swiftness, and he floated in a horizontal position, with apparent ease. Again, I glanced at my watch. The hand pointed to twenty-seven minutes before three. The kite, deprived of its ballast, had sunk to the ground. Watching narrowly, it was evident that Mr. Smith was slowly moving forward. It appeared to me that the bladder slightly contracted and expanded alternately, as one's chest does in breathing. Of this I could not feel absolutely certain, since the appearance may have resulted from their fluttering motion; yet, the Captain's opinion coincided with my own. After a few minutes (which seemed like hours), we perceived that Mr. Smith had begun to descend. Very gradually this was accomplished, and exactly at a quarter before three he touched the ground. We ran toward him, and found that he was considerably exhausted. He responded cheerily, however, to our hearty congratulations. As the wagon had already returned, it did not take long to stow away the kite, etc., and we then returned to the city.

"I have thus given a plain and exact account of this most extraordinary occurrence. I will not offer any speculation, concerning the nature of Mr. Smith's invention, and in fact do not consider myself at liberty to do so. But, I am greatly mistaken if the name of David K. Smith is not soon familiar to the public as one of its greatest benefactors. Any one can satisfy himself as to his character and standing in this community, by inquiring of Hon C.E. Vanderburgh, Judge of the District Court, or of almost any citizen of Minneapolis. Any person wishing to inquire further is at liberty to call upon me at my office, No. 26 Larmon Block; or a letter will reach me through the Chicago P. O., Box 6,026.

"WALTER V. COLLINS."

THE WATER POWER OF MINNESOTA.

The St. Paul Weekly *Press* has a long article upon the flourishing condition of manufactures in Minnesota, and gives interesting statistics of the value of some of trade there carried on. We copy:—

THE WATER POWER.

In order to turn this vast power to practical use the St. Anthony Water Power Company was organized in 1855. This company is now composed principally of Eastern capitalists. In 1856, the Minneapolis Mill Company was organized. In 1857 and 1858 the company proceeded to build a dam twenty feet high, running from the shore out into the river four hundred feet, thence up the river twelve hundred feet. Five hundred feet of the twelve hundred is a dry dam, the same hight as the portion running out from shore, and the remainder is lower, allowing the water to pour over it. Besides this dam the company built a canal at the shore end, one hundred and fifty feet long, which largely increases the opportunity for erecting manufacturing establishments. Mills situated on the dam pay for the use of the water alone, while the owners of those on the canal buy the ground and lease the water power. One of the saw mills pays $1,200; four pay $900, and one $600 per annum for the use of water. Next season the company intend to extend the canal five hundred feet beyond its present limit.

THE LUMBER TRADE.

The most important branch of trade is in lumber, a business in which an immense capital is already employed, and which, owing to the great demand for the article, is being rapidly increased.

WHERE THE LOGS COME FROM.

Ninety miles above the falls, on Rum river, and one hundred and fifty above on the Upper Mississippi, are the pineries, which afford an almost inexhaustable supply of logs. Here, in the winter, large gangs of men ply the ax vigorously, and by spring millions of feet are ready for the drives.

DRIVING.

As soon as the river opens in the spring, if the stage of water permits, the work of driving the logs down commences—a work which is far from agreeable and oftentimes dangerous. Few have any adequate conception of the expense and perplexity incident to the drives. For two months this season the log owners were compelled to pay men four dollars per day and board them, and the expense of bringing the logs to the mills has been at least two dollars for every thousand feet of lumber obtained.

All the logs on the Upper Mississippi, some ten million feet, have been brought down, but in the drives on Rum river there are still twenty-five million feet.

THE MINNEAPOLIS SAW-MILLS.

Having noted the progress of the logs from the forest to the boom above the city, we next turn our attention to the mills. Situated on the dam heretofore mentioned, extending from the shore into the river, stands a block of six saw-mills, 360 feet long by seventy feet wide, with three Ls, 32x40, the whole under a single roof. A visit to these mills will prove of interest to any one, as the scale on which business is done is unusually large.

SORTING THE LOGS.

All of the mill owners or lessees have peculiar marks, which are cut upon each log with an ax in the pineries. They then come down promiscuously to the St. Anthony boom, fully a mile above the mills, where they are sorted—those belonging to the Minneapolis mills being driven into the Minneapolis boom, and floated down to the mills. Directly in the rear of the building each mill owner has a pond, defined by floating timbers lashed together, and when the logs reach these ponds from the boom above they are again sorted and driven into the pond of their respective owners, from whence they are drawn up the slip by machinery into the mill.

A BUSY SCENE.

Entering the mills, the visitor cannot fail to be struck with the life and activity visible. As they are only separated by frame-work, a person can look through the whole length and see a great collection of men and machinery, all moving with the utmost regularity. It is, emphatically, the hive of industry, and the indolent man would blush to find himself a spectator of such a scene.

THE SAWS AND THEIR USES.

The greater portion of the work is done by gangs of saws, which, with a single run, will convert any but the largest logs into boards. A gang consists of from twenty to twenty-two saws, according to the size needed for the logs; and of the gangs there are two kinds, the *live* and the *pony* gang. The live gang is used principally for flooring, fencing and inch boards, and is rarely adjusted to make lumber of a different thickness.

The largest logs are taken to the double circular saw, one saw being located just above the other, in order to complete the work if the log is too large for the lower one, and in this way anything short of California trees will meet their doom in short order. These saws are used in making timber, dimension stuff, etc., and also in preparing the log for the pony gang, either by slabbing it or cutting it into bolts. The pony gang differs from the live gang in that it is used to saw lumber of nearly every kind and thickness, the number of saws being frequently increased or decreased according to the thickness desired.

In connection with the gangs are three other saws (circular), one edger and two trimmers. As soon as the gang has passed through a log, the boards go to the edging table, where the edges are smoothed and they are made of the same width, from whence they pass to the trimming table, where each end is sawed off at the same time, making them exactly the same length.

POWER AND CAPACITY.

It requires 40-horse power to run a gang of saws and 10-horse power to drive the edger and trimmers which go with it. The length of time required to run the gang through a log varies of course with the size; but eight minutes is ample time to transform a two-foot log into boards, and in fifteen minutes after a log comes up the slip in the rear of the mill it passes out to the sluice in front, finished lumber, and glides away to the raft. In ten hours a gang of saws can turn out about twenty thousand feet, and the double circulars from ten to twelve thousand.

NUMBER OF SAWS, ETC.

Number of gangs (22 saws in each), 9; number double circular saws, 6; number shingle machines, 6; number lath do., 6. Cost of six mills, $143,000; capacity six mills (24 hours), 430,000 feet; men employed, 300.

If these mills are run night and day, they can manufacture nearly half a million feet of lumber every twenty-four hours. Some of the mills are already running both night and day, all of them probably will be soon.

WHERE THE LUMBER GOES TO.

Three rafts have been sent from Minneapolis and two from St. Anthony this season; and five more are nearly ready. Some of these rafts go as far as Memphis. Three million feet have been sent to St. Louis, and taken thence by steamer to New Orleans. In Minneapolis, all the dealers have large yards in which there are immense stacks of lumber.

THE PRODUCT OF THE SEASON.

Though compelled to commence late in the season, the Minneapolis mills have sawed twelve million feet, and the St. Anthony mills six millions. It is estimated that on the Minneapolis side, thirty-eight millions, and on the St. Anthony side, nineteen millions more will be sawed before the close of the season. This will make the entire product of this season, seventy-five million feet.

PRICE OF LUMBER.

The following is the present price list of lumber at the mills:—

Common lumber and fencing per M.	$16 00
1st Siding	22 00
2d Siding	20 00
No. 1 Shingles	2 50
X Shingles	4 00
XX Shingles	5 00
Flooring, dressed	30 00
Flooring, rough	28 00
Dimension Stuff	16 to 20 00
No. 1 clear	30 to 35 00
No. 2 clear	20 to 25 00
No. 1 Pickets	20 50
No. 2 Pickets	15 00
Laths	2 75

This shows a large reduction, as for the past two years common lumber has been $22 per thousand, and superior lumber correspondingly high.

WHAT KEEPS UP THE PRICE.

Those who anticipate any material reduction in the price of lumber this season will undoubtedly be disappointed. The great demand, a wide market and high price of labor, all tend to render it impossible to supply it at a lower figure. Having been without logs for two years, the home stock of lumber became so reduced that the demand in our own State is immense; and add to this the close of the war, which makes a market extending from the Falls of St. Anthony to the Gulf, and the result may be imagined. The expenses are also enormous. During the winter, the men received from $40 to $50 a month and board, for working in the pineries; and for driving the logs, owners are, and have been, paying four dollars per day. Where driving formerly cost fifty cents per thousand, it now costs two dollars. Wages at the mills at the present time, range from two to four

dollars per day. From these figures (which do not include the original cost of the logs) some idea of the expenses of the business can be derived.

THE NAVAL CONTROVERSY.

In the last number of the SCIENTIFIC AMERICAN we made brief allusion to the fact that the war of words between the Navy Department and Mr. E. N. Dickerson, of this city, had resulted in a challenge, and stated that Mr. Dickerson had not accepted the same at the time of publication. He has since consented to a trial of his engines against those designed by the Navy, but protesting that the results will prove nothing. We find the following letter in the daily *Times*. It appears to be semi-official, and contains a clear statement of what the Department expect to do. When the trial takes place, we shall give all the facts in the case.

WASHINGTON, Aug. 1, 1865.

Several letters have recently been published on the subject of the machinery of the United States steamer *Algonquin*, written by E. N. Dickerson, Esq., of New York. Since he has thus brought the matter before the public, the following facts, from official sources, may be of sufficient general interest to warrant their publication:—

Mr. Paul S. Forbes, a wealthy merchant, and a patron of Dickerson, sought and obtained from the Navy Department, in March, 1863, a contract to construct the engines and boilers of a double-ender, according to Dickerson's patent, to compete with similar machinery designed by Mr. Isherwood, the Chief of the Bureau of Steam Engineering in that Department. The price was to be the same, and the contract contains the following guarantees, namely:—

It is further agreed, and mutually understood, that the variations from the specifications [of Mr. Isherwood's machinery] hereunto attached, and forming part of this contract, are to be in the dimensions and arrangement of the cylinder, and such parts as are thereby affected; in the design of the valve-gear; and in the design and arrangement of the boilers; and also in the surface condenser.

These changes are not to increase the weights of machinery, nor the space occupied by it, nor to decrease the weight of coal carried in the bunkers within the limits allowed for the engineer department, with the machinery described in the attached specifications.

And it is also agreed and mutually understood that, if, on the completion of the machinery and a careful trial thereof by such persons as may be directed by the Secretary of the Navy, it shall be found by them that its performance, either in amount of power developed, or in the cost, pro rata, of that power in coal, is less than those of the machinery described in the attached specification, they, the said parties of the first part, will remove it, and replace it at their own cost, with the machinery described in the attached specifications.

These terms show that the contract requires simply this: The department to ascertain by usual tests—first, the maximum power the two competing systems can be made to develop; second, the cost of the power, pro rata, in coal. The usual tests are the measurement of the power developed by means of the well-known "indicator," employed the world over for this purpose, and the weighing of the coal. The division of the first into the number of pounds of the latter consumed per hour, is the solution of the problem. This, the department has ordered to be done by a board composed of persons than whom none are supposed to be more competent. The machinery of the *Winooska* was selected to compete against that of the *Algonquin* simply because the *Winooska* was the most convenient vessel of her class at command.

The trials are to be made at the wharf with the paddle surface sufficiently reduced in diameter to enable the engines to work off all the steam that can be obtained from their boilers, and are to be continued 96 consecutive hours to give a reliable mean, which cannot be obtained from short trials. The powers developed are to be measured by the "indicator," the coal is to be taken from the same pile and carefully weighed as it is used, but before being carried on board, so that the draught of water and dip of wheels of both vessels will remain constant, and be the same throughout the trials.

The test is not of the speeds of the two vessels, for they are duplicates, and are to have duplicate wheels by the express terms of the contract and specifications. The test is simply whether the boilers, condenser, and valve-gear of the *Algonquin* are equal to, better or worse, than those of the *Winooska*, and the trial, as directed by the department, will not only conclusively show these facts, but how much better or worse. By making them at the wharf they can be continued longer, be made in a really philosophic manner with strict accuracy, and be witnessed by all who may feel interested in them, which could not be the case were they made in the river or at sea.

The Navy Department has not accepted a challenge from Mr. Dickerson; it has no correspondence with him and has nothing whatever to do with him, but is simply carrying out the provisions of the contract with Mr. Forbes, to determine whether the engine shall be accepted and paid for, or whether it shall be removed from the vessel. The contract does not provide for a trial of speed at sea. The vessels being the same, the result arrived at in the proposed trial will, however, unerringly determine which is the fastest vessel. The Navy Department will not be swerved from its duty to the contractor, or led into any controversy with Mr. Dickerson by any public statement of the latter.

JUSTITIA.

Train Oils.

The different oils that go under the one name of train oil, may be classified as follows:—A. That which is made from fish. This is made from the lard of the great marine animals, such as whales, sea-dogs, seals, etc., and sometimes even made from herrings. The quality will vary according to the peculiarity of the animal it is made from. The oil mostly in use, and known under the name of "Southern Sea Train Oil," is made from seal. The quality will also vary according to the preparation. B. Whale oil. This is of a brown color, is quite transparent, and when boiled with rarified sulphate acid, will throw out brown flakes. The liquid is not very thick and does not smell as bad as the following oils, which are obtained by fermenting the lard. C. Sea-calf's oil. This oil is of a pale brown color, much thinner than the former, is transparent, and when boiled with sulphate acid, will gradually settle to the bottom. D. Dog-fish oil. This is of a dark brown color, is much thicker than both the former, but its smell is unbearable. E. Herring's oil. The herrings are boiled in water and constantly stirred; when they are thoroughly cooked cold water is poured in; this brings up the oil to the top, it is then taken out and filtered and put into casks. Sweden is almost the only place where this oil is produced. F. Cod oil. This is made from the liver of the codfish, and is mostly manufactured in Helgoland and in Bergen. There are two kinds of it, one is white, the other brown. The white is obtained by melting the fat, not on fire, but merely by exposing it to the sun. It has the appearance of poppy oil, pale and yellow. It has a sweet taste, but when mixed with reagent, tastes somewhat acid. It dissolves in spirits of wine, and is much used in medicine.

The second sort is extracted by boiling the liver; its color is brown, and the fluid thick, and has a very offensive smell, and a cutting, bitter taste, but is easier dissolved in spirits of wine than the former. When boiled in water it throws out flakes, and more so when mixed with sulphate acid. The flakes, when dissolved in turpentine, or spirits of wine, show that gall fat is mixed with it. Its specific weight is 92. G. Dolphino oil. This is produced by melting the fat of the dolphin in hot water of 60°. Its color is pale yellow, has the smell of sardines, but, when exposed to the light and fresh air, it loses the offensive odor, and changes the color, first becoming brown and then almost colorless. This train oil is dissolved by adding five parts of boiling spirits of wine.—*Gerber Courier.*

Raising the "Congress" Frigate.

An attempt to raise the wreck of the frigate *Congress*, sunk by the *Merrimac* in Hampton Roads, has been partially successful. On the portion of the wreck which was recovered are two rusty guns, covered with oysters and barnacles. The woodwork is, of course, rotten and worthless, but the great amount of metal in and about the wreck will be quite valuable. Several pieces of coin have been found on the deck, which are prized highly by the finders, and will be treasured as relics of peculiar value. Several naval buttons were picked up, and at once fastened to watch guards. Among other things, one of the spectators found a complete set of artificial teeth. No human remains have as yet been recovered.

Magnesium Light for Telegraphs.

On Tuesday last some experiments with the magnesium light were made on board the *Great Eastern*, off Shoeburyness, by Capt. F. J. Bolton, of the 12th regiment. The night was windy, but signals were transmitted to and received from the shore at Shoeburyness, a distance of about six miles. This system of telegraphing, in which an alphabet on the Morse principle is used, bids fair to become universal, the Board of Trade being about to introduce it into the commercial code of signals. It is the opinion of Capt. Bolton, that the magnesinm will be cheaper than the oxy-calcium light, and equally powerful in its effects. On Tuesday night the light on shore was the oxy-calcium, while on board the *Great Eastern* the lime light was used. The lamp in the latter case not being so constructed as to keep out the wind effectually, there was some difficulty at first in getting a steady light, a delay which Shoeburyness noticed by signalling "Look sharp, look sharp; fire away!" An animated conversation between the ship and shore then took place, Shoeburyness finishing with "Good night, good night—our light nearly gone." The magnesium light has never been used by the Government for this purpose before Tuesday last, whereas the oxy-calcium light has been on trial for three years, so any conclusions as to the comparative merits of the two would be premature.—*London Examiner*, July 14.

The Speed of the Pen.

A rapid penman can write thirty words in a minute. To do this he must draw his quill through the space of one rod—sixteen and one-half feet. In forty minutes his pen travels a furlong; and in five and one-third hours one mile.

We make, on an average, sixteen curves or turns of the pen in writing each word. Writing thirty words in a minute, we must make four hundred and eighty-eight to each second; in an hour, twenty-eight thousand eight hundred; in a day of only five hours, one hundred and forty-four thousand; in a year of three hundred days, forty-three million two hundred thousand.

The man who made one million strokes with a pen in a month was not at all remarkable. Many men make four millions.

Here we have in the aggregate a mark three hundred miles long, to be traced on paper by each writer in a year.

In making each letter of the ordinary alphabet, we must make from three to seven strokes of the pen—on an average of three and a half to four.—*Com. College Monthly.*

MARKET FOR THE MONTH.

	Price June 28.	Price Aug 2
Coal (Anth.) ₩ 2,000 lb.	$ 8 50 @10 00	$8 50
Coffee (Java) ₩ lb.	24 @ 25	25 @ 28
Copper (Am. Ingot) ₩ lb.	29 @ 30	30 @ 31
Cotton (middling) ₩ lb.	50	48
Flour (State) ₩ bbl.	$5 20 @ 6 15	$6 00 @ 7 00
Wheat ₩ bush.	1 70 @ 2 15	1 85 @ 2 30
Hay ₩ 100 lb	1 00	1 00
Hemp (Am. drs'd) ₩ tun.	260 00@270 00	255 00@265 00
Hides (city slaughter) ₩ lb.	7½@ 9	9 @ 10
India-rubber ₩ lb.	47 @ 70	48 @ 70
Lead (Am.) ₩ 100 lb.	9 75 @10 00	9 00 @9 62½
Nails ₩ 100 lb.	5 00 @ 5 25	6 50
Petroleum (crude) ₩ gal.	35½	32½@ 33
Beef (mess) ₩ bbl.	$10 00 @16 00	10 00 @14 50
Saltpeter ₩ lb	24	24
Steel (Am. cast) ₩ lb.	13 @ 22	13 @ 22
Sugar (brown) ₩ lb	9½@ 15¼	8@ 16¼
Wool (American Saxony fleece) ₩ lb.	75 @ 77	75 @ 77
Zinc ₩ lb.	12 @ 12½	12¼@ 13¾
Gold	1 39	1 45⅝
Interest (loans on call	4 @ 5	7

OUR MERCANTILE MARINE.—It has been definitely ascertained that more than six hundred sea going vessels belonging to citizens of this country have been sold during the war to British subjects. Those sold to citizens of other countries will probably bring up the total to a thousand vessels that were four years ago carrying the stars and stripes and are now sailing under foreign colors. The capacity of the vessels transferred is estimated at five hundred thousand tuns.

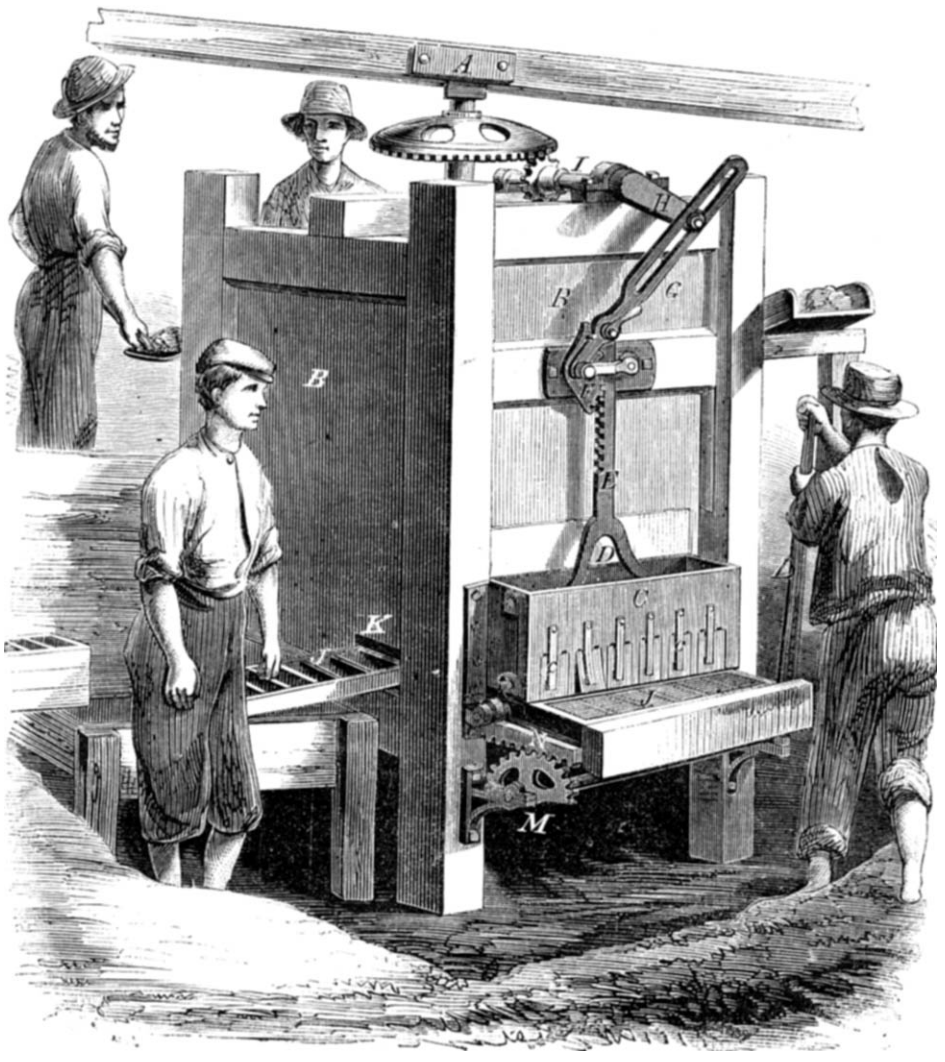
HEAVY ENGINE.—The Taunton (Mass.) *Gazette* says one of the largest locomotives ever manufactured in that place was sent from the Taunton Locomotive Manufacturing Co. It weighs 34 tuns, and is destined to the New Jersey Central Railroad.

Improved Brick Machine.

The appended article is furnished by the inventor.

"The material advantages of this machine consists in the use of the lever principle, by means of which the power required to work the machine is considerably reduced, while the pressure is vastly increased. Thus clay may be worked with less moisture than otherwise, and the bricks still be perfectly smooth, square and solid. In this way they are handled with greater ease, are less liable to injury, while the process of drying is shortened, and damage from rains thereby avoided. It is claimed by the manufacturers that the machine may be made to produce fifty thousand bricks per day—the rate of production in nowise interferes with the quality; a fair day's work, they state, is from thirty to thirty-five thousand. To make this last-named amount, one strong horse, two men to produce the clay, one man to sand the molds, one man to strike, two men to remove the bricks and one man to dump, are required.

"The body or box, B B, has inside of it a vertical shaft, H, which is turned by a horse attached to the sweep, A. On this shaft are knives to break up and mix the clay; also three forcing knives, six inches wide at the bottom, to push the clay into the molding box, C. In the molding box is a platen, D, worked by a rack, E, and toothed arc, F, which receive motion through a slotted arm, G, from a crank, H, on the horizontal shaft, I, which shaft is turned by the vertical shaft by means of bevel gearing, and makes about three turns to one turn of the vertical shaft. The molds, J J, are pushed in through the side, K, and are brought forward under the molding box by drawing forward the rack, N, by means of the toothed arc, M, on a shaft which is worked by the hand lever, L. When steam or water power is to be used, the inventor proposes, instead of the hand lever, to substitute gearing, by means of which the machine will bring forward the molds. As soon as the mold is brought under the molding box, the platen is forced down and presses the clay into the mold. During the downward movement of the platen, the slotted arm, G, gives such advantage of leverage to the crank, that the pressure is very strong; and during the upward movement of the crank the leverage is short, and the lift is quick. As soon as the platen is lifted, the mold is brought further forward into the fountain, J, in front of the molding box. During this forward movement of the molds, the bottom of the front of the molding box shoves off the clay level with the top of the mold, and thus forms the upper surfaces of the bricks. Lest stones or other foul substances in the clay, should be caught between the edge of the mold, and the edge of the molding box front, and cause breakage, there is a slide the under side of which is beveled so as to rise if any hard substance is forced against it. There is a slide or cam on the slotted lever, which regulates the press from one to six inches, and a nut with a handle to it, as shown in the engraving."



MARTIN'S "CHAMPION" BRICK MACHINE.

It was patented through the Scientific American Patent Agency, on the 27th June, 1865, by Henry Martin, and assigned to Bradford & Renick, 71 Broadway, New York, of whom further information may be obtained.

THE London *Atheneum* defines the meaning of the title F. R. S., as a man who Fairly Represents Science.

Hold on to the Running Board.

As the express train from Toronto was approaching Cornwall station, recently, the brakes were whistled down, the train backed up, and disappeared around the curve. After a delay of about ten minutes it came forward to the station. It was ascertained that the fireman had been out on the engine putting tallow in one of the cups. The train was running at full speed, and reaching the curve about a mile and a half west of the station unobserved by the fireman, the engine of course swerved as directed by the curve, causing the unfortunate man to fly off at a tangent. Singularly enough the result was not at all serious, for on the train returning to pick him up, he was found "marching on" to meet it.—*Cornwall* (C. W.) *Freeholder.*

A Choice Bit.

It seems there are some novelties recently discovered in the steam engine not generally known. We find the following lucid and astounding description in the New York *Herald.* It is about a new steam fire engine built at Manchester, N. H.:—

"It is the most powerful machine ever in use in this city, and considering the apparent scanty area of its motive power, it is in our view a marvel of beauty, symmetry and power. The boiler is only thirty-six inches in diameter and sixty-five inches in length, containing the almost incredible number of three hundred and thirteen copper tubes, twenty-four inches long and an inch and a quarter in diameter, thereby exposing a surface to caloric operation capable of generating a pressure of steam for instant work in about nine minutes. The pumps are two in number, of double action, and the steam cylinders, eight inches in diameter and twelve inches stroke, all working on the same piston rods, and all the fittings secured with the most durable mechanical skill, by which the harmony of motion at full work is as true to time as the most accomplished composer in the science of music could render his creations captivating in the highest degree. The materials used in the construction of this model of beauty in the steam engine are each and all of the choicest articles in their respective kind, such as the best boiler plate iron cased in wood and overlaid with Russia iron, hooped with bands of brass, a brass dome and funnel casing with india-rubber valves and polished mountings of turned brass and copper where such things are used. The various and numerous range of apparatus not actually in action with the machine itself when at work, are curious and pleasing in an eminent degree from their positive utility, such as the signal lantern, the wheels and brakes, the driver's seat and lamps, oil cans for the journals, self-supplied; signal whistle, a jackscrew, a coal bucket, capable of containing as much fuel as would work the engine for two hours at the highest pressure; a complete set of nozzles, of every bore and dimension, to provide against accident in the event of the one at work becoming deranged or disabled, and a hose one thousand feet long of the best tanned bullock hide, riveted in copper and capable of throwing, with great force, two, three or four jets of water at a time, a distance of upwards of two hundred and sixty feet from the nozzle. The second test was by taking the supply from an inexhaustable quantity in the river, and this being accomplished on the hydrant principle and from suction the results were most gratifying in every respect. It may now be averred with the utmost confidence, and without the remotest apprehension that anything rational can be said to the contrary that in this one production of scientific and mechanica skill the city of New York is in possession of the most powerful, the most complete, and for all the purposes for which it was designed and constructed in practical utilitarian and instant operation, a fire engine which stands as a model upon which all the world beside can fashion machines of kindred tendency, but the doubt is, can the combined skill of the whole world produce a better or suggest an improvement in the design and execution of the Metropolitan Fire engine of New York city?"

[We should say, no!—EDS.

STATISTICS.—A curious calculation has been made lately by a savant, well known in Paris for his peculiar antipathy to the fly. He collected three thousand flies in a room measuring two cubic meters; on the floor he spread a pounded loat of sugar. At the end of four days he went in to investigate the result of his experiment. There remained a teaspoonful of sugar. This statistician therefore calculutes that, sugar being at the rate of thirteen cents a pound, a fly costs the country twenty cents from its birth to its demise.

[That is, if fed on loaf sugar.—EDS.

NEW COMBUSTIBLE.—I see the mention of a new combustible, invented by a gentleman who very appropriately bears the name of Stoker. It appears to be very pure charcoal, finely ground and made into a paste with starch. The paste is molded into cakes or balls of different sizes, and then dried. When perfectly dry these may be lighted with a lucifer match, and will continue to burn steadily, like German tinder, without giving flame or smoke. The combustible is intended for heating urns, chafferettes, etc.—*Paris Correspondent of Chemical News.*

A MODEL miniature locomotive, made of gold and silver, with a ruby for a head-light, and costing $4,000, is on exhibition at Taunton, Mass. Its wheels are driven by clock-work.

How Paper Collars are Made.

We find the following in an exchange:—"At the end of the first room are piles of pure white paper, awaiting their turn to be guillotined in a machine furnished with twenty-two shear blades, which cut the paper into the requisite strips for the collar, on precisely the same principle as a gigantic pair of scissors, thus leaving no rough edge. The product of two paper mills is consumed in this factory, and at the rate of a tun to a tun and a half per day; the average production being about one hundred thousand collars per day, which find a ready sale, despite the numerous imitations with which the market is flooded. From the hands of the attendant who turns out the pure, even strips of paper, they pass into the hands of another fair executioner, who brings the incipient collar nearer its birth by passing it through another pair of knives, by which it acquires shape in an instant. Still another machine marches relentlessly up and down, and as the collar leaves its iron embrace, the three button holes are visible, large, clean cut, firm holding and easily handled.

"The collar is now placed between two dies or clamps, passed under a quick, heavy pressure, and emerges again stamped with that close imitation of stitching which renders it so perfect an imitation of its linen brother that the difference can hardly be distinguished; it is stamped also with the size and corporate mark. Next comes the crimping machine, which draws the curved line on which the shape of the collar turns, and which by allowing space for the cravat insures a smooth fit. They then pass through the nimble hands of a damsel, who with deft fingers flying with lightning-like rapidity, turns the collar over as no machine has yet been able to do; from these hands it passes to the molding machine, where it is bent round into perfect shape and finished as a perfect collar.

"This process is an important one, requires skill in the operator, and strength in the paper, which must be of the best to resist the immense strain required to mold the collar into perfect shape.

"The collar is now, as it were, born shapely, trim and elegant, and ready to adorn the neck of the most fastidious, having passed through seven distinct processes in its manufacture. It is once more taken in hand by women and packed into boxes by the hundred, or in the well-known little round boxes of ten each, which are so convenient to toss into a valise when off for a week in the country or elsewhere. For the item of boxes the company expend over $60,000 per annum. The first machine turned out the collar entire, performing the whole work at once, but slowly and imperfectly; but the genius of the inventor, quickened by the rapidly increasing demand for the article, added improvement after improvement, by one machine after another, until the manufactory is now capable of turning out five millions of collars per month.

"The American Molded Collar Company employ in this manufactory seventy neatly-dressed, intelligent looking American women, most of whom are young. These women earn a dollar per day, and their work is clean, healthy and not very laborious. Mr. Gray, who first commenced to manufacture in the spring of 1863, has now eight patents on collars and machine, having previously secured them in Europe; three of the directors of the Company went there this summer with skilled mechanics and American machinery, to take measures to establish the manufacture in England, France and Belgium, where they will probably soon attain that popularity which the American molded collar has achieved in this country."

VALUE OF CITY PROPERTY.—The lot on the corner of Broadway and Ann street, in this city, made vacant by the burning of Barnum's Museum, was bought by Mr. James Gordon Bennett, who proposes to erect thereon a fire-proof building for the *Herald*. The lot is 55 feet by 100 feet, and $450,000 was paid for it, and $200,000 besides to Mr. Barnum for his unexpired lease of it. Non-residents can thus get an idea of the value of some city lots.

THE *Great Britain*, a broad-gage English locomotive, with 18-inch cylinders and 24 inch stroke, has worked up to 1000-horse power. So says the London *Engineer*.

WING'S MILLSTONE DRESS.

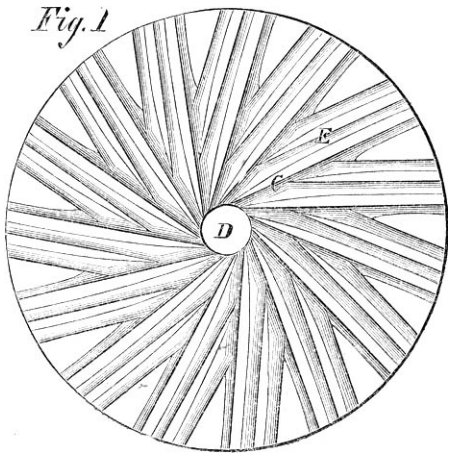
These engravings represent a new method for dressing millstones, for which it is claimed that unusually good results are obtained. The appended description is furnished by the inventor:—

"Fig. 1 is a plain view of a runner stone inverted, having my improved dress.

"Fig. 2 is a vertical section of the same, showing the form of the furrows.

"Fig. 3 is a vertical section of a portion of a pair of millstones, dressed in the usual manner, showing the feed opening, or bosom, *a*.

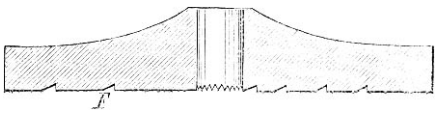
Fig. 1



"My improvement has a two-fold object, viz.: to effect the grinding as near to the eye as possible, thereby saving the power required for driving the stone, and by so doing to carry off the flour in the furrows and prevent its keeping between the lands of the stone as it approaches the periphery, whereby overgrinding is produced from greater friction, and retention of the flour between the parts of the stone that revolve the most rapidly.

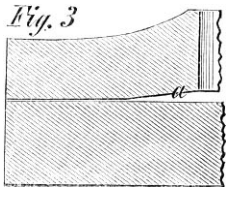
"In the ordinary mode of dressing millstones for grinding wheat flour the lands run of equal width, and form parallel lines from the periphery to the eye, leaving the furrows of equal width and parallel with the lands. I take from the lands, or surface of the stone, and widen the furrows as they approach the center.

Fig. 2



"The furrows, in my method, consists of two series—the leading furrows, C, which diverge tangentially from the eye, D, outward to the periphery, diminishing slightly in width—and parallel with each of these are two or more auxiliary furrows, E, which fill the angular space between the leading furrows, and which are rendered shorter by their intersection with the next contiguous furrow. The bottoms of both incline, as at F, Fig. 2; the lands between extend to the eye, thereby carrying the plane of the stone fully up to the eye. At this point the furrows are made deep enough for the grain to enter, whereas some millers reduce this surface around the eye for a short distance below the common plane of the lands. This opening or hollow is called the bosom, and its object is to facilitate the entrance of the grain between the stones. By my plan of dressing, however, this is rendered wholly unnecessary, and its evils obviated.

Fig. 3



"To grind flour properly the kernels should not be pulverized between the lands, but between the sloping and inclined sides of the furrows, which prevents the flour from being spoiled while grinding, and this is accomplished by the method of dress which is here shown, the object being to make the lands act as guides at the eye, to direct the grain into the furrows.

"A further advantage is that it can be used in any stone where there are straight furrows without dressing any more of the lands away than my furrows require. When introduced it does not require one-half the labor to keep the stone in order that the common dress does, and it is also an improvement in grinding damp grain of any kind."

The inventor will sell rights of mills, towns, counties or States on reasonable terms. Patented on March 21, 1865, through the Scientific American Patent Agency. For further information address Abram Wing, Mayville, N. Y.

Alloys.

Every thoughtful metal worker, who has his hands too full of his daily employment to spend much time in experimenting on the properties of the metals he uses, must have often wondered how it came to pass that with all our boasted knowledge of chemical and metallurgical subjects, we have as yet only succeeded in inventing some half-dozen useful alloys. Brass, pewter, gun-metal, German silver, and type metal are really all the alloys that we can name as entering into the manufacture of the more common articles of trade in this country. The causes of this apathy in experimenting on the properties of mixed metals are manifold. The practical metal-worker of the present day is generally ignorant of the chemistry of the metals he uses; and even if he were well informed, he would be too busy fighting the great battle of competition to set himself the extra task of experimenting upon alloys. But metal workers will turn round very naturally and ask how it is that practical chemists, whose business is to make experiments, do not investigate the capabilities of metallic mixtures more frequently than is at present the case. We fear very much that the only answer to be given to this is that scientific chemists of all countries have, almost without exception, been bitten with a mania for nearly exclusively pursuing their researches and expending their talents upon organic compounds.

This department of scientific chemistry is so vast and so fruitful in results that it is quite a rarity to see an article in a scientific journal upon a metal or metallic compounds. Even those chemists who have not wholly given up the study of inorganic compounds seem to apply themselves to analytical observations or to the investigation of the rarer metals. As an example of the want of knowledge of the capabilities of alloys, we may instance the discovery lately made by M. Pelouze, of the French mint, that the best metal with which to alloy silver is zinc, and not copper, as we have always believed. Now, considering that silver has been known from the remotest ages, and zinc, at any rate, since the birth of modern chemistry, it seems singularly strange that no one ever thought of trying the effects of these two metals on one another until now. To take the case of iron, a merely cursory examination of the second volume of Percy's "Metallurgy" will show that some of the very simplest questions relating to this most common and important metal remain as yet unanswered. Such an apparently vital matter as the formation of steel is a bone of contention at nearly every meeting of the French Academy of Sciences, one party persisting in declaring that no steel can be made without the intervention of both nitrogen and carbon, while the other side as manfully contend that nitrogen has nothing to do with cementation, carbon being the only element concerned in the process. This example shows that not only does the action of one metal upon another, in a state of combination, require patient study, but also the effect of the addition of varying proportions of the metalloids, such as carbon, phosphorus, silicon, sulphur, etc., to different metals, remains still to be discovered.—*Chemist and Druggist.*

Packing Pistons.

Before a vertical engine piston is packed it should be wedged into the exact center of the cylinder by driving blocks on four sides, and verifying the work by exact measurements with a stick that must both "touch and go" on the rod. The packing will then hold the piston true, and the engine will work far better than where the piston is packed by a guess.

IT is said that in and around London, at the present time, no less than about 150 miles of railway are in course of construction, involving an outlay of thirty millions sterling at the ordinary rate of calculation.

Notes and Queries

R. H., of N. Y.—We notice your letter in relation to the article on the slide valve, and the criticisms thereon. Also your inclosed tracing. You are correct in one point, which is, that in the first diagram the eccentric is on the upper side, when in order to turn the crank as the arrow points it should be on the lower. This is not a material difference, as the main object was to show the position of the eccentric with relation to the crank. In the second diagram the same position is shown, as we well know, and is there pointed out as an error purposely. The tracing of the valve and eccentric sent is a fancy sketch, which shows nothing except that the parts in question, as you have drawn them, are wrong, and would never work. If you will take the trouble to go on board a steamer you can satisfy yourself by observation of the correctness of our article.

B. C., of Del.—There are only two kinds of primers used in artillery service—friction and percussion. A percussion primer is a quill full of fine powder, capped by a percussion wafer made of mealed powder and fulminate of mercury. A friction primer is a tube full of powder, with a spur on top full of a composition that explodes by friction, and is set off by a wire pulled through it by a lanyard or rope.

J. A. J., of Ill.—In summer the sun rises north of east and sets north of west. For his yearly track through the heavens see a celestial globe.

T. M., of Conn.—A correspondent puts the following query:—"Suppose the piston in the middle of the cylinder, is there any more steam room on one side than the other? I should say not." You would be in error, then for the capacity of the upper side, supposing the engine to be vertical is less than the lower by the diameter and length of the piston rod in it.

C. H. B., of Mass.—Windows are crystallized, or made to imitate ground glass, by dissolving epsom salts in hot beer or a weak solution of gum arabic. You can make any pattern or border you please, by cutting out a design on a sheet of pasteboard, and rubbing the design with a damp cloth.

L. W., of N. Y.—One kind of toilet rouge for the complexion is made by powdering isinglass, or "mica," and coloring the same with carmine.

B. P., of Ill.—Rupert's drops are simply melted glass dropped into water. They form a bulb like a pear, with a stem. The thick end may be struck with a hammer without injury, but if you break the tail the whole affair will explode.

J. R., of N. J.—The density of steam depends upon the pressure, and if the steam is saturated—not superheated—the pressure bears a constant relation to the temperature. On page No. 48 of our last volume you will find a table of densities of saturated steam at various temperatures, from 136° to 288°. At 136·77° a pound of steam fills a space of 132·6 cubic feet; at 242·90°, a space of 15·11 feet; at 288·25°, a space of 7·202 feet.

J. D. H., of Ill.—Find illustration of apparatus for distilling spirits of turpentine from wood on page 24, Vol. XI. It was invented by Seth L. Cole, Burlington, Vt.

D L., of Pa.—Several different machines for mining coal have been described in the English papers, but we do not know that any of them has been practically successful. They were all designed for bituminous coal.

A. P., of N. Y.—You ask us to tell you all about making rods to find mines in the earth. We do so with pleasure; they are all humbug.

Q. B. S. M., of Md.—Any good treatise on geometry will give you the information about the cycloid.

A. A., of N. Y.—It is quite common for different persons to have the same ideas. Your experience on this point will probably prove valuable to you.

D. W., of Ill.—Your specimens are common quartz, of no value whatever.

G. W. J., of Me.—A Blanchard lathe will make your toy boat complete, from stem to stern, out of a single block. Of the value of such a trade you must be the judge.

R. G. N., of Wis.—You can determine the altitude of the sun on land by means of a quadrant and an artificial horizon. For the arrangement of the latter, consult a book on navigation.

C. B., of Mass.—For Patent Report apply to your M. C. Patentees are not entitled to copies. You may get one as a favor.

A. A. H., of Me.—There is no cement in the world that will line a revolver cylinder, that is worn out, so as to make it useful again.

W. E. C., of Conn.—We have no means of judging positively what amount of fuel you will save by a heater, but the economy will be great—certainly 10 per cent. You can inject hot water to your boilers with a common pump, provided the same is so arranged that the feed water flows into it. Take a piece of square rubber, a quarter of an inch less than your stuffing box, wind this with cotton yarn—lamp wick—until the gasket so made fits the stuffing box; cut it in lengths, so that it will meet at the ends, and pack the valve stem with it. A piece of lead pipe, with a piece of hemp gasket run through it, is a good thing to put in the bottom of the piston-rod stuffing box. The pipe must be hammered square first. Put a common hemp gasket over it.

C. C. B., of Pa.—An idea is not patentable unless it takes some palpable form, as in a machine, a design or a new process. Your project for operating balloons by ropes—hauling them down when they reach a certain altitude—has been practiced many times.

W. E. S., of Ind.—To make matches consult Vol. XII., where you will find a variety of recipes for the purpose. We are called upon sometimes to publish the same recipe an unreasonable number of times.

Correspondence

Queries on Belts Answered.

Messrs. Editors:—I have read with much interest the various articles relative to belts. I have known of power being let by the inch of belt running 800 feet per minute, which is a poor way of letting power for the landlord. I have charge of an engine that runs 40-horse power. It has worked as high as 65-horse power, by the rule of 33,000 pounds one foot high per minute with the same width belt, viz., 16 inches. It runs 1,600 feet per minute, which would make 32-horse power according to theory, but practice shows double this power.

I submit the following answers to questions concerning belts in your last issue:—

In my experience I have found that a double belt would do the work with ease that a single one of the same width could not do. Mr. Arnold's plan of running two single belts, one over the other, is new to me, but there is reason in it.

Belts that are soft on one side get crooked, so that in running they go nearly off the pulley, when the resistance of the machine that is driven causes the belt to slip off.

I never knew of a belt that did not run on a tight and loose pulley to twist. Some machinists make the tight pulley a little larger than the loose, so as to have a tight belt. Such a pulley is almost sure to twist the belt, especially if there is a space between the two, and the shipper is very near the pulley.

Opinion is pretty equally divided on which side out the belt should be run. A belt will drive more on the hair side. I think it will wear longer on the flesh side, as the quality grows better as it wears from the flesh to the outside.

Nothing in my experience is so good for belts as neat's foot oil, and but little of that.

A straight-faced pulley is much better than a crowned one. A crowned pulley keeps an unequal tension on the middle and edges of the belt. Crowned pulleys are only useful, in my opinion, to unskillful millwrights.

Lacings crossed on the inside are more liable to cut on each other by the pressure on the pulley.

New York, July 20, 1865. A. M. W.

Tempering Mill Picks.

Messrs. Editors:—In your journal of July 8th a correspondent wishes you to publish what you know about tempering mill picks. As he does not wish to pay for any one's experience, I will give mine gratis. A mill pick should be of the first quality of cast-steel, and should not be overheated; heat of a charcoal fire is better than stone coal. If you use stone coal burn out the sulphur before heating the pick. Heat the point and mass of the pick a straw color; sharpen and refine by dipping your hammer into water, and hammer until nearly cold; heat repeatedly if necessary; sharpen both ends before tempering. To temper, heat very slowly and uniformly; heat to a light cherry red or dark straw; temper in a solution, say, to two gallons of clean water add half pound of alum, one ounce of saltpeter dissolved; then add as much clean salt as will dissolve; dip the point in the mixture as far up as you wish to temper; move it around until sufficiently cool, then rub the point briskly in the scales on the anvil block, then plunge the pick in cool water before the temper runs down. If properly done you will have as good a pick as you wish for.

A Miller of Thirty Years' Experience.

Wiscay, Alleghany Co., N. Y.

The Main Spring Question.

Messrs. Editors:—On page 36, present volume, in the article on "Main Springs," etc., it appears to me that your correspondent is increasing, rather than diminishing, the liability of the main springs to break. If the spring is thicker in the center, or raised, as he says, having to bend around the arbor and itself, it would have the tendency to fray itself to pieces by the center being the larger and the sides the smaller arc of a circle. The same may be said of the flat spring; that the outside of a spring is a larger arc of a circle than the inner, by the difference of the thickness of the spring, but in the proposed spring it is increased by the difference in addition to the thickness by the hight that the center is raised. The proper spring would be stronger, but would, I think, possess this additional cause of self-destruction. My observation is that the changes of the wind have more to do with breaking main springs than any thing else; let the wind suddenly change from north or northwest to east or southeast and I expect and usually find a harvest of watches with broken main springs, those that have been in ten, fifteen, or twenty years, equally as well as those that have been in only as many days. And it does not make any difference, either, that the watch was in the pocket or hung up at the time of the change of wind. Another cause of broken main springs is, the sultry weather of dog days, in August, when nearly one-half of our work is to repair watches with the spring broken.

I do not know what connection there is between a change of wind and a main spring, but my own observation and that of other watchmakers of large experience confirm the above remarks. The breaking of the main spring is the lesser evil, the breaking of the center pinion, which so frequently follows that of the spring, is the greater; if by some means that could be prevented it would be of more benefit.

A friend has suggested another source of the breaking of springs—thunder storms, when it is not unusual to have a number break, hanging on the board. Francis Stowell.

A Problem of Raising Weights.

Messrs. Editors:—Can you tell me what will be the constant strain on a rope raising a weight of 3,000 pounds, ten feet per second, perpendicularly?

Also, what is the percentage of loss of power in the crank, in changing the reciprocating motion of a piston to the rotary motion of a shaft?

What authority can you name to me which treats of these subjects plainly and simply?

C. H. R.

New York, July 16, 1865.

[The strain on the rope is increased beyond that of the weight only while the velocity of the weight is increasing; after a velocity of 10 feet per second has been imparted to the weight then to maintain this requires only the strain of 3,000 pounds. The increased strain, while the velocity is being given, depends on the rapidity with which the velocity is imparted. To impart a velocity of 32 feet in the course of one second requires an additional strain just equal to that required to sustain the weight. You will find this problem fully discussed in "Bartlett's Mechanics."

The loss of power in changing reciprocating into rotary motion by the crank results only from the increased friction; the amount of the friction depends of course upon the material of which the bearings are made, the perfection of the workmanship and the quality of the lubricator. The best treatise on friction is to be found in "Morin's Mechanics."—Eds.

Noise an Indication of Rain.

Messrs. Editors:—Will you explain through your paper why sound travels better just before a storm? People living ten or fifteen miles from a railroad on distinctly hearing the cars, exclaim, "It's going to rain." I. T. E.

Grand Rapids, Mich., July 15, 1865,

[The distance at which sounds can be heard depends much on the state of the atmosphere; but if you live north or west from a railroad, you would hear the cars more distinctly when the wind was from the south or east, and that wind would be likely to bring rain.—Eds.

The Crank and Eccentric.

Messrs. Editors:—I have repeatedly seen statements in your paper to the effect that the crank and eccentric were always at right angles to each, or near it. This is not so; in some cases the crank is with the eccentric, as in a beam engine for instance. I think this statement should be corrected in your next issue. G. W. R.

Mystic Bridge, Conn.

[We do not remember to have stated that the eccentric was always at right angles with the crank, because we know better; if we did it was an error. We have said, however, that in most cases the eccen-

tric was at right angles with the crank, as it is. Individuals can set their doubts at rest on this point by looking at any locomotive, horizontal or vertical engine. The illustration of the beam engine is not a happy one, for with a long toe cut-off the lead, or what amounts to it, the travel of the toe before it touches the lifter is so great that the throw of the eccentric is nearly with the crank; but for this lead the steam eccentric would be where the exhaust eccentric on the other shaft opposite it is nearly at right angles with the crank.

We also said in the article on "How to set a Slide Valve," that levers made no difference in the relative positions of the crank and eccentric. This assertion has been criticised by correspondents, but, unless our eyes deceive us, it is quite correct, for we have taken pains since writing that article to examine working drawings of oscillating engines with poppet valves, side lever engines, steeple engines, locomotives and table engines, and we find that, with but one exception, where the valve is worked by a rack and pinion, the diagrams published are correct as regards the relative position of the crank and eccentric.—EDS.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Machine for Refitting Stop Valves.—The valves of that class commonly known under the term of "globe valves," are usually made with conical valves secured to a screw spindle and fitting into a conical seat. If a valve of this class becomes leaky, the only way to refit the same, heretofore, has been by regrinding, or, if that operation was insufficient or too slow, by unscrewing the stop valve from its connecting pipes and sending it to the shop, where it would be refitted in the turning lathe or with the proper tools. Either of these operations causes much loss of time and money. A simple and effective device, by which the operation of refitting said stop valves could be carried out in a short time, and without disconnecting the valves from the pipes, has been a desideratum which will be hailed with delight by everybody who is troubled with leaky valves. The device which forms the subject matter of the present invention, and which is intended to fill the want above pointed out, consists of two parts—one for refitting the valves and the other for refitting the seats. The former consists of a conical concave mill made in the precise form which the valve is to have, and provided with a yielding internal center, in combination with suitable bearings, two for said concave mill and one or more for an adjustable center, in such a manner that by removing the valve from the seat and placing it between the adjustable and the yielding center it is at once in the proper position to be acted upon by the concave mill, and a few revolutions of said concave mill, imparted to it by an ordinary ratchet brace, or any other suitable means, produce the desired effect on the valve and bring it in the requisite shape to fit into its seat. The part for refitting the seats consists of a conical mill or reamer with a cylindrical stem, to be used in combination with a guide, which is made to take the place of the stuffing box and nut through which the valve spindle passes, in such a manner that by removing said box with the valve and valve spindle, and inserting therefor the conical mill and its guide, a few revolutions given to said mill will bring the seat in the proper shape, the whole operation being performed without removing the stop valve from its connecting pipes. The inventor of the above device is Samuel Wing, of Monson, Mass. Geo. R. Topliff, of 60 Pine street, New York (joint assignee), may be addressed for further information.

Adding Machine.—This invention consists in the employment of a revolving disk, marked on its rim with a series of figures, commencing at 1 and ending at 100, or any other figure, and provided with cavities to receive a pin, by means of which said disk can be rotated, and with a helical or cam groove in its face, to operate in combination with a stationary abutment, and with a hinged index and stationary dial, marked with figures from 1 to 100 near its circumference, and with other figures, from 1 to 16, more or less, on the sides of a segmental slot in which the index plays, in such a manner that by inserting a pin in one of the cavities opposite to any desirable figure on the circumference of the dial the revolving disk can be turned on its axis for a distance equivalent to the figure which was opposite the respective cavity, and, at the same time, the index moves in the cam groove, and the figure in question is registered; and, by repeating the operation with the same or other figures, such figures are added up and the sum regis ered on the dial and disk. T. T. Strode, of Mortonville, Pa., is the inventor.

Safety Valve for Steam Boilers.—This invention consists in operating two or more valves on the same lever, said valves being held closed by the action of a weight or spring, in such a manner that when the pressure of the steam rises beyond the desired point the several valves open simultaneously, and the combined areas of the openings thereby obtained for the escape of the steam is greater than that of a safety valve of the ordinary construction; the invention consists, also, in an adjustable fulcrum, applied in combination with the lever, from which two or more valves are operated, and with a weight or spring holding said valves closed against the action of the steam in such a manner that the time when the steam blows off is regulated by shifting the fulcrum instead of by a change in the power exerted by the spring or weight to hold the valves in their seats. S. G. Barker, of Dunmore, Pa., is the inventor.

Calendar Clock.—This invention consists in a reciprocating or oscillating slide, marked with the names of the months, commencing with March and ending with February, and provided with openings opposite to said names, and with a projection which bears on a wheel, the face of which is marked with figures, from 1 to 31, to indicate the days of the months, and which is provided with eleven concentric grooves and oblique channels leading from the periphery of the wheel to the first groove, from the first groove to the second, and so forth, in such a manner that whenever the projection of the movable slide comes opposite to one of these channels said slide drops or moves and a new name of a month is brought in view, and opposite to the figures on the rim of the month wheel. The time when the slide changes from one groove to the other is determined by the position of the communicating channels, which corresponds to the number of days of the different months. T. T. Strode, of Mortonville, Pa., is the inventor.

Machine for Rounding and Polishing Balls, Etc.—This invention consists of a machine composed of four, more or less, longitudinally sliding rotary mandrels, radiating from a common center, and provided with chucks at their inner ends, in combination with suitable mechanism to force these chucks alternately up against the ball to be turned or ground, and with a milling tool or grinding wheel, in such a manner that two of the chucks will clamp the ball at a time, and the ball is thereby turned in either direction, while the grinding wheel or milling tool is held in contact with the surface of the ball by means of one or more screws or by an adjustable weight. The force with which the grinding wheel or tool is forced against the surface of the ball can thus be regulated at pleasure. The position of the revolving chucks, and the time when the same grasp the ball, are governed by a double cam and by weights or springs, and said chucks are so shaped that they grasp the general surface of the ball, and that cavities and projections occurring on the surface of said ball will not be able to disturb the correct central position of the same. John L. Knowlton, of Philadelphia, Pa., is the inventor.

Padlock.—This invention relates to a padlock of that class in which the shackle engages or locks itself when forced down into the lock. The invention consists in a novel means for throwing the shackle out of the lock when liberated from a catch and bolt which holds or locks it, and for retaining or holding the catch and bolt, when the shackle is out from the lock, in proper position to receive the shackle when the latter is pressed or forced into the lock. The invention further consists in a novel arrangement of the means aforesaid with the catch, which operates in connection with the bolt for locking or securing the shackle. H. Jackson, of New York City, is the inventor.

Lock.—This invention relates to a lock for pianofortes, sewing-machine cases, and articles generally having hinged lids. The invention consists in the employment of two bolts of segment form, provided with shanks and connected with a tumbler in such a manner that the bolts will, as the tumbler is operated through the medium of a key, work in the path of a circle in and out from the lock case, in order to lock or unlock the article to which the lock is applied. E. L. Gaylord, of Terryville, Conn., is the inventor.

Drills for Oil and Other Wells.—This invention consists in making a drill, for boring wells, of fast and movable cutters combined together in one stock, in such a way that the movable cutter will be the leading cutter, and, after it has made its stroke, will receive a blow on its end from the descent of the fast cutters, thereby driving it past them into the rock. Elias Baker, of Pittsburgh, Pa., is the inventor.

Method of Cutting-out Buttons from Ivory, Bone, Etc.—This invention consists in a novel method of cutting buttons from ivory, bone, vegetable ivory wood and other substances. In the art to which this invention belongs, as now conducted, buttons are cut out of plates or disks of the material used, by placing the disks in a lathe and bringing up against them, on each side, cutters of the proper shape, which cut out and separate the buttons from the said material. That portion of the material which is left after the separation of the button was accounted as waste. This is especially true of the manufacture of vegetable ivory into buttons. This substance comes in pieces of small diameter, not great enough to furnish the ordinary-sized buttons for coats and other articles of apparel, and yet so much larger than one button as to leave a great part of the material unused. The object is to utilize this waste portion of the material, which is accomplished by cutting out therefrom one or more rings at the same operation which produces the button. Charles H. Bassett, of Birmingham, Conn., is the inventor. Assigned to The Birmingham Button Company, of same place. New York office, No. 102 Duane street.

A Fire-arms Commission.

Mr. Erskine S. Allin, master armorer at the armory in Springfield, has been commissioned by the War Department to visit the various arsenals in England, France and Switzerland, and to be present at trials of breech-loading fire-arms soon to take place in England and Switzerland. Here he will visit Ghent, Antwerp, Brussels and Liege, the town where the famous Belgian rifles are made, next Paris and other cities in France, and finally Switzerland. The rifle trial in the latter country will begin September 2d, probably at Geneva, and will be open to competitors from all over the world, a prize of $5,000 being offered for the best breech-loader, besides the sum which the Swiss government will pay for the patent right of the gun. Mr. Allin will return to London so as to be present at a government trial of breech-loading rifles in that city, September 30th. On his return, about three months hence, he will make a report to the Department of the result of his observations. Our Government could not well have selected a more suitable agent than Mr. Allin for this purpose, as he is admirably qualified for it by his long connection with the armory in its practical workings, and his well-known mechanical ability. D. De Gothal, teacher of languages, and for some time a clerk at the armory, will accompany Mr. Allin as interpreter.—*Springfield* (Mass.) *Republican.*

An Oil Well Destroyed.

Well No. 19, United States Farm, on Pit Hole Creek, was destroyed by fire about seven o'clock P. M. on the 3d inst. The well was finished that day, and was flowing about two hundred barrels, and no tanks being up the oil was allowed to flow on the ground. Some twenty persons were standing in and around the derrick, some of whom it is feared were unable to escape, for the ground for forty feet around was one sheet of flame in a moment, Three men are known to be seriously burned, and only saved their lives by jumping into the creek. The well is still flowing and burning.

THE Pittsfield (Mass.) *Eagle* says the work on the east end of the Hoosac tunnel is progressing at the rate of sixteen feet a day into the solid rock of the mountain.

Improved Barrel Roller.

This engraving illustrates an improved apparatus for rolling barrels, and its form and application can be seen at a glance.

It may be described as a pair of tongs with disks, A, revolving loosely on the outer ends, the disks of such size as to easily enter within the chine of the barrel. The tongs are so made that the barrel may turn without rubbing when the disks are not exactly in center. The opening between the handles is such that the natural fall of the arms, in pushing or pulling, will press the disks against the barrel head, so that the heavier the load is the more securely will it be held. In using this tool, it is not necessary to insert the disks within the chine, but if they are run up along side, so as to be nearly inserted, and then pressed together, at the same time pushing or pulling, one half revolution of the barrel will throw them into place. When on the barrel the tongs and barrel form a combination similar to a common wheelbarrow, but the device is much more easily handled than a wheelbarrow carrying the same load.

STEPHENSON'S BARREL ROLLER.

Any person who has ever rolled a heavy barrel, especially down hill where the strength is used to retard, instead of to hasten it, will see at once how readily one barrel can be guided, held back, or pushed forward by the aid of this machine. Many severe injuries have been caused by the carelessness, and sometimes by unavoidable accident, of persons rolling heavy casks down declivities, where it is necessary for them to stoop over in very uncomfortable positions, and use heavy leather gloves to retard the speed of the barrels. In such cases, a tool of this kind would be much more efficient, for the user could bring his whole strength into action, instead of a part of it only, as in the former case. The heaviest casks, requiring the services of several men, can be handled with ease by this machine by attaching a rope to the handles so that a number of men can take hold. In such a case as rolling down a wharf and then up a gang plank, when the cask reaches and rests at the lowest point, the apparatus can be just turned over and the same men that let it down can pull it up again. In short, there is no case of barrel-rolling in which it is not superior to hand labor. This apparatus was patented April 25, 1865, through the Scientific American Patent Agency, by Henry W. Stephenson of Cincinnati, Ohio, who holds it for sale, in whole or part, to suit applicants. Any person desiring information will address him as above.

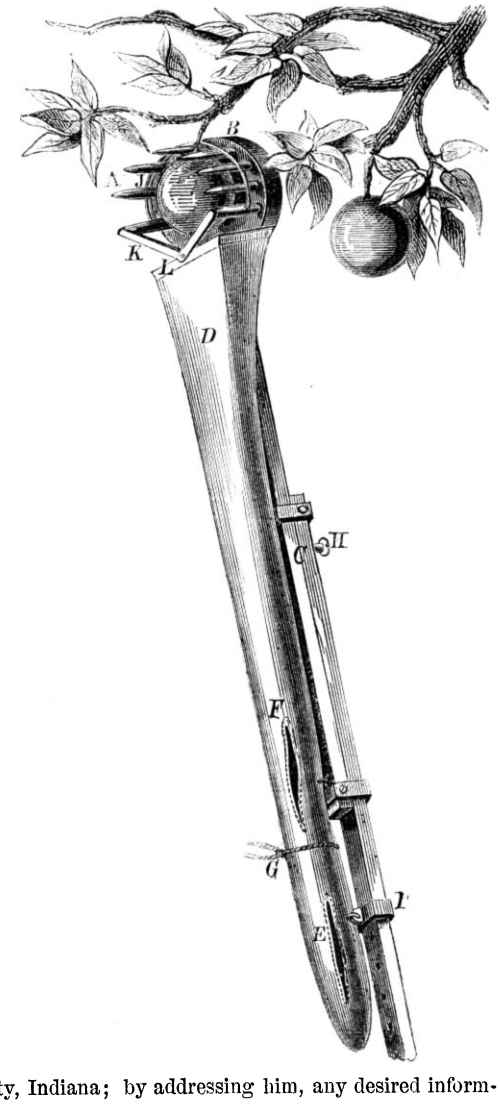
LITTLE'S FRUIT GATHERER.

The device illustrated by this engraving is for gathering apples, peaches, pears and other fruit, which generally hang so high as to make it necessary to climb the tree or use some device by which the fruit may be reached from the ground.

No better description of this fruit gatherer can be given than to call it a semicircular rake; A being the teeth thereof, and B the head in which they are inserted. An extensible rod, C, which can be made longer or shorter, to which this rake is attached, enables it to be raised to the highest part of any fruit tree. The fruit is detached from the tree by a raking motion, in clusters or singly, and when severed falls into a long pouch, D, from one of the pockets of which it can be received into the hand. When the rod, C, is extended, the lower pocket, E, is used, but when the fruit is gathered close at hand, the pouch is shortened, so to speak, by a cord, G, which is tied tightly around it between the two pockets. To preserve the length to which the rod, C, is adjusted, a set screw, H, is employed, and I, is an adjustable slide to which the lower end of the pouch is attached. Sometimes, owing to the position of the fruit and other circumstances, the knife, J, which encircles the teeth, constitutes an important accessory to the latter in severing or breaking the stems of the fruit; and for the same purpose the knives, K, may be called into requisition. The upper end of the pouch, E, is held open to receive the fruit, by the metallic strip or retainer, L.

Owing to the simplicity of the device it can be constructed with little difficulty, and manufactured at little expense.

A patent for the invention was granted March 21, 1865, to James A. Little, of Danville, Hendricks County, Indiana; by addressing him, any desired information can be had.



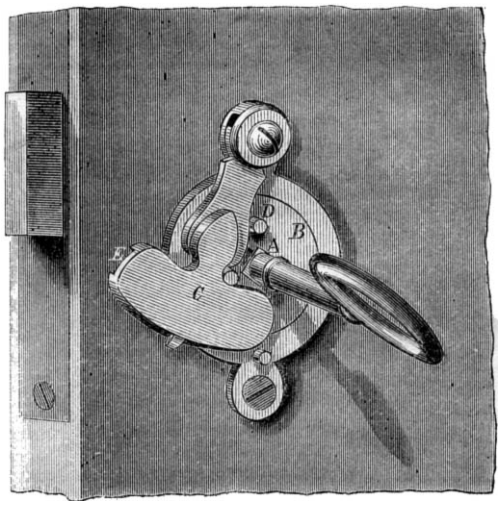
A FINE piece of carpeting, measuring 14 feet by 20, the first of the kind manufactured in Austria, has just been placed in the Museum at Vienna. It presents a map of the railways of Central Europe, and was produced at Prague.

DESAUSSES'S LOCK PROTECTOR.

Travelers sojourning in ho ls have awakened in the morning to the unpleasant consciousness of the fact that their pockets had been rifled in the night; and this in spite of the lock on the door. Skillful thieves take advantage of the small end of the key which protudes through the hole, and by using a peculiar pair of nippers, grip the end so that they are able to turn the key and enter the room; when the key is not in the lock the latter is picked with a skeleton key.

It is to foil burglars who use forceps that this device has been invented.

It consists in forming the key with a square shank,



as at A, and in a plate, B, which fits this shank. This plate works in a recess so that it turns easily in any direction when the door is to be locked, but is held fast by the hasp, C, when the same is vertical, or in such position that the pins, D, fall into a groove, E, in the hasp. When this occurs the key can not be turned from the outside by any contrivance whatever. Thus there is a double lock on the apartment; the door is locked by a key and the key itself is locked.

This device can be applied to the cheapest, as well as to the most costly lock, and can be constructed of four pieces of cast iron, or made ornamental if desired. A patent is now pending through the Scientific American Patent Agency, by J. H. Desausses. For further information address A. B. Justice, No. 14 North Fifth street, Philadelphia, who has the patent for sale.

A LUXURIOUS CHAIR.

We have had a very curious chair in our office for some days past, and it is one of the most comfortable and unique things of the kind we have seen. The seat is composed of sections of india-rubber tubes strung on fancy-colored cords; the back also is so made, and the sensation experienced is delightful. The greatest benefit, however, is derived from the elasticity of the rubber. This gives an easy, springing support to the person, impossible to describe, but not at all difficult to endure. The chair is lighter than those made with springs, is much cooler in summer, and seems in all respects a desirable and useful novelty. It is a fact that all men are not built on the same model, but with this piece of furniture it matters little how fearfully and wonderfully they are made, for this elastic seat supports every part of the person that touches it at once, and does not rest one set of muscles at the expense of another set.

There are also couches, lounges and other articles made on this principle, and for the reasons above set forth they must prove exceedingly comfortable. These articles of furniture are made by the patentee, Mr. Hector Hyves, No. 45 Mercer street, New York.

SOME of the Hartford capitalists have brought out the Weed Sewing Machine Company, of Nashua, N. H., and have formed a new joint stock company with a capital of $200,000 for the manufacture of the machine at Hartford.

MR. HOLLOWAY'S successor to the office of Commissioner of Patents has not yet been announced. There are rival claimants.

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NEW YORK, SATURDAY, AUGUST 12, 1865.

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CAST STEEL FOR BOILERS.

A most intelligent and energetic mechanic, Mr. S. H. Roper, of Boston, Mass., has been for some time engaged in making steam carriages for experimental purposes, with a view to obtain the greatest efficiency for the least weight, and to render the steam carriage an independent, convenient and useful motive power. In these efforts he has been highly successful, and although he regards the carriage more as a plaything than for its general utility, he has pursued the subject thoroughly, and decided some questions which are interesting to the mechanical community. These relate chiefly to a reduction of weight for steam engines and boilers of a given power. This steam carriage weighs but 450 pounds in complete running order, with water for eight miles. The cylinders are double, direct-acting, $3\frac{3}{4}$ inches bore and 10 inches stroke.

The boiler is the most remarkable detail, and is a novelty worth seeing. The shell is 30 inches long and 15 inches diameter. It is a vertical, tubular boiler with an internal fire-box, and the tubes are 10 inches long by $\frac{9}{16}$ths diameter. The shell, as well as the tubes, is made of steel, and it is in the employment of this material that Mr. Roper has been able to reduce the weight, and not only maintain but increase the evaporative efficiency of his boiler. The shell is $\frac{1}{30}$th of an inch thick, while the tubes are only $\frac{1}{40}$th. With this boiler steam has been raised in eight or ten minutes, and it is capable of bearing a pressure of 90 pounds per square inch with entire safety. It supplies all the steam necessary for the two cylinders, and propels the carriage eight or nine miles an hour without any difficulty.

In this machine we have one of the most novel steam boilers ever made. And it is a matter for earnest consideration whether, in the employment of cast steel for steam boilers, we may not only greatly increase the strength and reduce the weight, but also add to the economy of the apparatus, by facilitating the transmission of heat. To use a homely illustration, a thin tea kettle boils more quickly than a thick one; and, for the same reason, steam boilers with unnecessarily heavy flues, flue sheets, fire-box walls and furnace crowns, transmit less heat than lighter ones. The only danger to be apprehended in departing from the established time-honored rules and precedents in this case, is in weakening the structure. An example of what a thin iron flue is capable of sustaining, was shown in Lee & Larned's steam fire-engine *Niagara*. This steamer had a large vertical boiler, the tubes in which were but $\frac{1}{30}$th of an inch in thickness and $1\frac{1}{2}$ inches diameter, by some four feet long. We have repeatedly seen 240 pounds to the square inch on this boiler, or others with tubes no larger or thicker. Some of the tubes were occasionally collapsed so flat, however, that neither steam nor water could pass through them. These were drawn iron tubes; but if steel had been employed they would not have failed, because the latter metal has a higher tensile strength.

Another lesson on the value of good workmanship is given by Roper's boiler. To bear the pressure required of them, the tubes must necessarily be small in diameter. They were, therefore, all drilled and turned, and were thus homogeneous throughout. Such a method of making a steam boiler is, of course, expensive; but if the evaporative efficiency is increased thereby, as it is, it is only a question of first cost, for the money returns in the future by the fuel saved.

The rapidity with which heat is transferred from one substance to another is directly in proportion to the difference of temperature between them.

The conducting power of steel is lower than that of iron; the former being, according to experiment made by Weideman and Franz, 224; while steel is but 218. But this difference is so small as to be of no moment, and is wholly nullified when the tensional strength of the two metals is considered; for, by taking advantage of the superior virtue of steel we can make a structure much lighter of it, for a given strength. Moreover, in a cast-steel boiler, the rapidity with which heat would be transmitted through the thin walls would be less likely to burn the exposed parts—the tube, sheet and fire-box crown—than in the comparatively slow action of thick iron plates.

Very many persons confound strength with weight, and suppose that, because a number of pounds of material are added to a certain part, a corresponding increase of strength is obtained, Nowhere do we find this more prominently illustrated than in steam boilers; too often the essential points of safety are neglected, while those which bear no strain are heavy in the extreme.

It is, therefore, with a view to promote the efficiency of steam apparatus and economy in its use that we suggest further experiments in this direction. Cast steel of fine texture, well riveted and annealed very low, would seem, from the experiment of Roper, capable of sustaining great pressure. We doubt if a boiler 30×15 inches was ever made which furnished so much steam, or was capable of evaporating so much water in proportion to its size, as this one. If, by a corresponding increase in the thickness of the plates and the external dimensions, boilers can be built of proportionate strength, a great economy of space would result in sea-going ships.

THE ART OF ADVERTISING.

The art of advertising consists chiefly in putting business before the world in such a manner that it will be novel and attractive. This seems a truism, but there are very few persons who are capable of understanding it. The large fortunes accumulated by individuals in a few months for the sale of simple articles to be found on every corner, prove there is some virtue in advertising, for these same people have covered dead walls, pavements, and every spot, remote or near, that the eye of man would be likely to fall on, with announcements of their glue, etc.

We have recently received through the politeness of a large manufacturing concern in England forty illustrated catalogues of different firms in Great Britain who are engaged in the manufacture of agricultural implements and other machinery, from a round pig's trough to a huge steam plow. These catalogues, collected for us at considerable trouble, are valuable additions to our library, and we intend to have them bound for reference. In looking over them we have been much impressed with the great variety and the ingenuity of the tools and machinery adapted to the agriculture of Great Britain. Several of the firms manufacture steam-cultivating machinery, and devote considerable attention to a discussion of its economic advantages.

On receipt of the catalogues mentioned we immediately wrote to all the parties here we could think of, requesting them to send us their trade circulars, which, on coming to hand, were carefully examined. It was with much regret that we found the American catalogues were far inferior in point of mechanical execution to those received from abroad. The English trade circulars are printed on clear white paper, with new type, excellent cuts—mostly wood, but often steel and lithographs—and they appear to so much better advantage than our own that we confess we blushed for our business men.

Eyes are precious, and it is more than a catalogue is worth to pore over it and scrutinize a cut with a magnifying glass in order to make out what it means.

Besides this, some of our trade circulars are of little value, or considered so by the publishers of them, for when one asks what a certain machine in one of them is, he is often told, "Oh, we don't build them like that now." Of what use is it to publish a cut of it, then?

We recently saw a work of art in the shape of a trade circular, issued by some French drug house. The book was a large octavo, and was certainly fit for any center table. The drugs were shown in their cases; the effect of the glass was beautifully given; the crystals were clearly shown; the powders were properly represented, and the natural colors of the several articles were all given with such accuracy and artistic effect that a chemist would have recognized any kind at a glance. A work of this description is a study, and costs immensely, but who shall say that it does not pay? The gentlemen of the firm where we examined the circular told us they were frequently ordering quantities of goods suggested by an examination of its pages.

Some of our lithographed cards of tobacco, of hair oils, of stove polish, and similar things, are exceedingly beautiful, as are also the cards of our large shipping houses, announcing the sailing of vessels. Bankers frequently issue cards of the finest bristol board, whereon their business is displayed in gold and colors. It is not from a lack of taste among us that we have such poor trade circulars in general, but rather from a want of appreciation of the advantages likely to spring from them. A good circular attracts every one, while a poor one is sure to repulse the most determined purchaser.

We shall be pleased to receive duplicates of all the trade catalogues which contain illustrations. We are frequently importuned to say where such and such a machine can be had, and the catalogue will prove useful to us for reference.

INDISPENSABLE TOOLS.

We always take pleasure in calling the attention of our readers to any improvement in machines or tools which are useful and necessary to economize time and labor. We have lately seen a scroll chuck, manufactured by Mr. A. F. Cushman, of Hartford, Conn., which is a most valuable tool. By the aid of it any piece of work can be held true in the center by simply screwing up one disk. This chuck has been used for a long time through the country, and it is not as a novelty, but as a standard article, that we call attention to it.

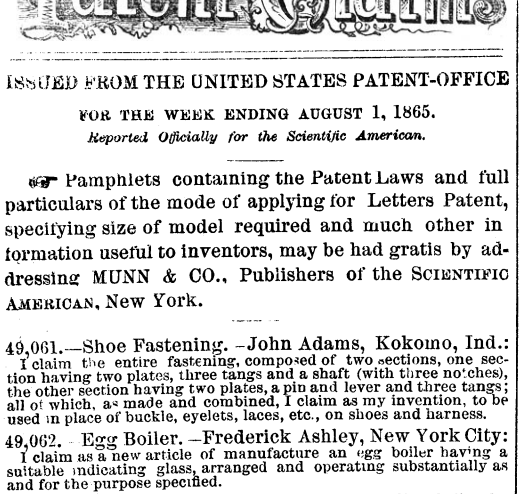
By an ingenious modification of the same principle, Mr. Cushman has constructed a neat little drill chuck, which has capacity for a wide range, from $\frac{3}{8}$ths to $\frac{1}{32}$d of an inch, and yet is compact and handsomely finished. We trust these goods will be widely adopted by mechanics, for they are all they are represented to be.

Examiner-in-Chief.

It is reported that Hon. Elisha Foote, of Saratoga, N. Y., has been appointed by the President an Examiner-in-Chief in the Patent Office, in place of Mr. Coombs, resigned. We have known Judge Foote for many years, and can speak in unqualified terms of his character and qualifications. For many years he has been employed as senior counsel for Burden, of Troy, in his famous spike suit against Corning, Winslow & Co.

AFTER two years of labor on the new defensive works near old Fort Hale, New Haven harbor, water has been let into the moat. The water gates are constructed in the solid rock, through which a distance of twenty feet has been blasted for the admission of the water.

W. C. DODGE, ESQ., of Washington, D. C., wishes to correspond with parties who are prepared to make a steam carriage for common roads.



ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING AUGUST 1, 1865.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

49,061.—Shoe Fastening.—John Adams, Kokomo, Ind.:

I claim the entire fastening, composed of two sections, one section having two plates, three tangs and a shaft (with three notches), the other section having two plates, a pin and lever and three tangs; all of which, as made and combined, I claim as my invention, to be used in place of buckle, eyelets, laces, etc., on shoes and harness.

49,062.—Egg Boiler.—Frederick Ashley, New York City:

I claim as a new article of manufacture an egg boiler having a suitable indicating glass, arranged and operating substantially as and for the purpose specified.

[This invention relates to a novel and very useful egg boiler, by which the expiration of the time usually allowed for boiling eggs is plainly indicated, the advantages of which are obvious.]

49,063.—Steam Pump.—J. B. Atwater, Chicago, Ill.:

I claim the combination and arrangement of the chambers, a b, valves, c d, pipes, D E G, and cocks, g g', constructed and operating substantially as described.

49,064.—Lamp.—Lewis J. Atwood, Waterbury, Conn.:

In a lamp burner with the chimney holder projecting beyond the perforated burner shell, I claim uniting the chimney holder to the shell by a hinge whose center is at or near the edge of the shell, so that the side of said shell shall form a stop to the chimney holder when the chimney is turned back, as specified.

49,065.—Oil Well Drill.—Elias Baker, Pittsburgh, Pa.:

I claim, First, A drill for boring oil or other deep wells constructed of a plurality of flat or chisel-shaped cutters, one or more of which are movable up and down past the other cutters or cutting faces of the drill, substantially as and for the purpose above described.

Second, I also claim so constructing a drill, having both fixed and movable cutting faces, as that the head of the main drill stock shall on its descent deliver a blow on the stocks of the movable cutters, substantially as and for the purpose above described.

Third, I also claim forming a reamer on the end of one or both of the stocks, B B', of the drill, substantially as above described.

49,066.—Paint Composition.—James Ball and John Parker Ford, Zanesville, Ohio:

We claim the addition of litharge, red lead, borax and sugar of lead to coal tar, thereby giving body and drying qualities to the composition, and making a durable covering to a roof or other wood work to which it may be applied.

49,067.—Sheep Chair.—Orlando Barker and George E. Blakelee, Huntington, Ohio:

We claim the above described sheep chair, constructed as and for the purposes herein set forth.

49,068.—Safety Valve for Steam Generators.—S. G. Barker, Dunmore, Pa.:

I claim First, The application of two or more valves, b b, in combination with one and the same lever, E, and with a spring or weight, substantially as and for the purpose set forth.

Second, The adjustable fulcrum, F, in combination with the lever, E, valves, b b', and spring or weight, constructed and operating substantially as and for the purpose described.

49,069.—Manufacture of Paper Stock.—Henry Betts, Norwalk, Conn.:

I claim the application of the fibers of the stalks and also of the roots of the plant known as sedge to the manufacture of paper, whether the same be used separately or in combination with other ingredients, substantially as herein set forth.

49,070.—Rotary Engine.—Dana Bickford, Boston, Mass.:

I claim the combination of the brace, g, and its receiving and stopping passage, h, with each piston, D, arranged in and so as to operate with a cylinder, B, cam, C, and a case, A, substantially as specified.

I also claim the combination and arrangement of the passage, l, in the head or side plate of the case, A, with the cylinder, B, and its pistons, D D, arranged within the said case, as and for the purpose specified.

I also claim the arrangement of the annular packing recess, c, in the head or plate, b, and with respect to the cylinder, B, as specified.

49,071.—Animal Poke.—Abner W. Bishop, York, Ohio:

I claim the application of the spring, E, to upper side of lever, which, by reason of the combustion of the yoke, G, and bolts, D and C, and lever, B, the pins, F F, protrude and withdraw, as the nature of the case requires.

49,072.—Mucilage and Marking Brush.—Edward H. Boswell, Philadelphia, Pa.:

I claim a rubber or other elastic band applied to the brush and cover of a mucilage, marking or other bottle, for the purposes herein specified.

[This invention consists in the use of an elastic band applied to the stem of the brush and to the cover of a mucilage, marking or other bottle, for the purpose of always keeping the brush elevated above the contents of the bottle, except when forced down for the purpose of taking up some of the fluid for use.]

49,073.—Conical Turning Gage.—Milton Bowker, Fitchburg, Mass.:

I claim a combination composed of the self-adjusting bar, D, the pinion and arbor, C, the friction roller, G, the scroll spring, F, the check pin, H, the hand, E, and the dial plate, B, the whole being arranged substantially in the manner and for the purpose herein described and set forth.

49,074.—Helices for Magnets.—Leverett Bradley, New York City:

I claim a helix composed of two or more connected spires or tiers of uncovered wire, with sufficient space between the several turns of the wire to perfectly separate them from each other, and with the different tiers of wires forming the helix also separated (except at the ends) by the interposition of some non-conductor of electricity.

49,075.—Cultivator.—James Brewer, Albany, Ill.:

First, I claim the combination of the corn guards, h, the stirrups and the swiveling standards, S, with the frame, when arranged and operating as described.

Second, The combination of the swiveling front plows and the frame, with the adjustable sliding collars, the drag chains, the lifting chains, the tension screws and the tilting lever, when constructed arranged and operating as described.

Third, The combination of the plow standards and frame with the adjusting bracket, O, and swiveling or crank hinge, P, when constructed, arranged and operating as described, for the purpose of varying the angle of the plow to the furrow, while allowing the plows both vertical and lateral play, as set forth.

Fourth, The combination of the triangular frame, the adjustable driver's seat, the lifting lever, the outer plows, the adjustable inner plows, the shields, the stirrups and the lifting chains, when arranged and operating substantially in the manner and for the purpose described.

49,076.—Shoe.—David Brown and Wm. S. Wooton, Kokomo, Ind.:

We claim the combination of the slit, f, at the back of the boot, the double wings or gores, l l, attached at the respective sides of the said slit, and the flap, o, attached at the top of the counter, and the outer edges of the gores, l l, passing completely around the boot top and fastening above the instep in front, all as herein represented and described.

[This invention relates to a very important improvement in boots or shoes, which enables them to be put on and taken off of the feet with great facility and ease, while, at the same time, there are no apertures in the upper through which moisture can reach the feet.]

49,077.—Reaping Machine.—J. O. Brown, A. Ingham and F. L. Lomont, Massillon, Ohio:

We claim, First, The link, b, and standard, F, in combination with the strip, a, and platform, H, hinged together, substantially as and for the purpose set forth.

Second, We claim the arms, c c', pivoted or hinged to the shoes, in combination with the platform, H, substantially as and for the purpose set forth.

49,078.—Fare Box.—A. H. Bugher, Cincinnati, Ohio:

I claim the checking and registering device, composed of the slot, D, resilient tongue, N, and bell, O, when arranged and constructed as herein described.

49,079.—Fare Box.—A. H. Bugher, Cincinnati, Ohio:

I claim providing the back of check boxes with a concavity, E, as and for the purpose herein set forth.

49,080.—Fare Box.—A. H. Bugher, Cincinnati, Ohio:

I claim in locks a key-hole guard or scutcheon, J, provided with a flaring stud or button, M, adapted to operate in connection with the curb, L, for the reception of a wax seal, arranged as herein set forth.

49,081.—Fetter for Animals.—M. F. Burlingame, Willett, N. Y.:

I claim, in combination with the hinged ring, A, the cap, C, and its spring, the whole constructed and operated substantially as and for the purposes set forth.

49,082.—Car Brake.—Wm. L. Burt, Boston, Mass.:

I claim the combination and arrangement of the rods, G H, with the brake heads, the lever, b', and the windlass mechanisms for operating such lever.

I also claim the arrangement and combination of the adjusting screws and nuts, b c, with the lever, F, and the rods, G H, applied to the brake heads, as specified.

49,083.—Horse Hay Fork.—J. R. Cadwell, Dexter, Mich.:

First, Constructing the fork with a head, A, and tines, a, and with an upper grasping tine or tines, C', substantially as and for the purpose set forth.

Second, Making the handle, C C', of a hay fork, which is constructed with a head, A, and tines, a, to serve the two-fold purpose of a handle and of a grasping tine, substantially as described.

Third, Extending a combined handle and tine, C C' from a pivot on the inner or front side of the head, A, of a fork, substantially in the manner and for the purpose described.

Fourth, The combination of the tines, a, head, A, pivot, e, combined handle and tine, C C, and pivoted loop, D, substantially in the manner and for the purpose described.

Fifth, The combined handle and tine, C C, formed substantially as represented in Fig. 4, in combination with the fork, A a, substantially as set forth.

Sixth, The combination with a fork, constructed with a head, A, and tines, a, of one or more upper grasping tines, C, and a locking and tripping device, substantially as and for the purpose set forth.

Seventh, So constructing or applying one or more grasping tines or teeth to a fork that the ends of said grasping teeth swing down below and in front of the tines, a, of the fork and thus serve the two-fold purpose of confining the hay upon the tines, a, and of a guard for protecting the tines, a, substantially as set forth.

49,084.—Hand Stamp.—Dexter H. Chamberlain, Roxbury, Mass.:

I claim supporting the arm, C, which carries the type block, in such manner as to allow of its adjustment, substantially as and for the purpose set forth.

I also claim supporting the type block by a pin, t, passing into or projecting from it, substantially as described.

I also claim the slotted bearings, x, through which the inking ribbon, e, is shipped upon the rods, d, substantially in the manner and for the purpose set forth.

49,085.—Door Bolt.—Chas. Chevallier, Brooklyn, N. Y.:

I claim a bolt, the shank of which forms a toothed rack, and which operates in combination with a folding lever, C, spring catch, D, and button, E, substantially as and for the purpose set forth.

[This invention consists in a bolt provided with a toothed rack, which gears in a toothed segment at the end of a folding lever, in combination with a spring catch, in such a manner that when the tooth is pushed out the folding lever lays flush with the front plate of the case which contains the bolt, and is locked by a spring catch, thereby keeping the bolt firmly in position, and preventing it from dropping down spontaneously, or from being pushed down or raised by unauthorized persons; and when it is desired to withdraw the bolt from its socket the spring catch can be made to release the pulley lever by pressing a button in the front plate, and said folding lever forms a convenient handle, by which the bolt can be withdrawn from its socket with considerable force.]

49,086.—Railroad Car Spring.—Wm. F. Converse, Harrison, Ohio:

I claim the collet, G, in the described combination, with a centrally clamped disc spring.

49,087.—Gang Plow.—C. W. Corr, Carlinville, Ill.:

I claim the crank axles, C, provided with the hole, or its equivalent, as shown and described.

Second, I claim receiving the plows by means of the clip, b, and brace, f, substantially as shown and described.

Third, I claim the combination of the plow standards, a, stirrups, d, and lever, N, all arranged to operate as and for the purpose set forth.

Fourth, I claim attaching the independent crank axle, C, one above and one below the main frame, as shown and described.

Fifth, I claim the stirrup or guide, V, in combination with the bolt p, and stud, p', for the purpose of adjusting the tongue laterally, and, at the same time permit it to have a vertical movement, as and for the purpose set forth.

Sixth, I claim the foot lever, W, arranged to operate in connection with the tongue and main frame, with its front end working in the slotted bolt, X, as and for the purpose set forth.

Seventh, I also claim the slotted bolt, X', in combination with the slotted wedge, x, for the purpose of adjusting the parts, as shown and described.

49,088.—Cider Mill.—J. A. Crever and F. H. Kerney, Cincinnati, Ohio:

We claim the employment in a crushing and expressing mill of a cylindrical concave, D, revolving in partial contact with a smaller and interior cylinder or roller, F, in the manner and for the objects substantially as set forth.

49,089.—Lamp Chimney.—Wm. H. Culp, Hammondsville, Ohio:

First, I claim the glass shade, A, metallic chimney, B, metallic rim, C, and guards, D, the whole being constructed, arranged and operating as described.

Second, The metallic rim, C, constructed, arranged and operating substantially as described.

49,090.—Carriage Jack.—G. L. Cummings, New York City. Antedated July 26, 1865:

Fifst, I claim the combination of the frame, A B, elbow lever, D, friction roller, e, and sliding bar, C, all constructed, arranged and employed in the particular manner herein described, so that the short arm of the lever can be thrown into or beyond a vertical position, and thus sustain the weight without fastening the hand lever.

Second, The combination of the adjustable rest, E, and vertically moving slide, C, when constructed and arranged to operate as herein specified.

49,091.—Shuttle Driver for Sewing Machine.—Volney Cutter, Cincinnati, Ohio:

I claim the spring, d, and its central bearing pin, in combination with the pivots, c, horns or tappets, a a, and pins, e e, as described, and for the purpose explained.

[This invention consists in the employment or use of yielding horns or tappets in shuttle drivers of sewing machines, in such a manner that the shuttle, instead of striking against a solid body at either end of its stroke, comes in contact with said yielding horns or tappets, and injury to the shuttle driver is avoided.]

49,092.—Shuttle for Sewing Machine, Etc.—Volney Cutter, Cincinnati, Ohio:

I claim the combination and arrangement of the spiral springs with the bearings of the bobbin journal, for the purpose of producing the requisite friction, to prevent the thread from being paid out faster than it is needed, as specified.

[This invention consists in providing spring bearings for both journals of the bobbin of a shuttle, and it is designed chiefly for use in sewing machines.]

49,093.—Ink Stand.—Samuel Darling, Bangor Maine:

I claim the combination of the concave socket, a, and the friction spring, C, with the ink fountain, A, and its stand, B, such ink fountain being capable of being revolved within the said socket, as and for the purpose hereinbefore explained.

I also claim the combination of the niche, f, the fountain, A, the stand, B, and the spring, C, whereby the spring is made to answer the two-fold purpose of a cover to the ink and a means of holding the fountain in its seat, under circumstances as above specified.

I also claim the combination of the groove, n, and the studs, o p, or their mechanical equivalents, with the pressure spring, C, and the fountain, A, so applied to the stand as to be capable of being revolved therein, substantially as specified.

I also claim the arrangement of the ventilating stopper, k, and the vent hole, i, for its reception with the ink, f, and the fountain, A, the whole being substantially as set forth.

49,094.—Vise.—H. B. Dart, Westfield, Mass.:

I claim a vise, provided with the usual parallel jaws, and with the oblique-faced or V-recessed jaws, combined and arranged substantially as set forth.

[This invention consists in combining with an ordinary vise, having parallel jaws, for grasping plane surfaces, a pair of jaws, having faces provided with V-shaped recesses or notches to grasp cylindrical articles, such as tuting rods, etc., by which two implements are contained in one and the valve of the ordinary vise greatly augmented.]

49,095.—Reciprocating Propeller.—Moses Depuy, Pittsburgh, Pa.:

I claim the employment and use of a swinging propeller, attached to and operating directly on a line, or nearly so, with the piston of the engine, without the intervention of a crank, combined with a sliding frame working in an overhang attached to the outside of a vessel, when constructed, arranged and operating substantially in the manner and for the purpose herein set forth.

49,096.—Harness Motion for Power Loom.—C. Duckworth, Mount Carmel, Conn.:

First, I claim the employment of a loose cross arm, c', upon the rock shaft, c2, in combination with the knives, a a, and fixed cross arm, c, substantially as described.

Second, The double-acting pitman rods, F F', the former being connected to the rock shaft, c2, and the latter being connected to the loose arm, c', substantially as described.

Third, The slotted adjustable guide, a3, in combination with the projection, a2, on the knife, a', substantially as described.

Fourth, The specified construction, arrangement and combination of the closers, b b', and knives, a a', when the latter are operated as described, for the purpose set forth.

49,097.—Hydraulic Jack.—Richard Dudgeon, New York City:

First, I claim the arrangement and construction of the cistern pump chamber and ram cylinder, in the manner herein described and for the purposes set forth.

Second, I claim the relative arrangement of the pump chamber cistern, and upper aperture of the cistern, whereby the pump chamber, although situated within the cistern and made in one piece with it, may nevertheless be bored out and have its plunger applied and removed as set forth.

Third, I claim the combination and arrangement of the rod within the plunger for tripping the valve, substantially as described.

Fourth, I claim the arrangement of the pump cylinder within the cistern and between two apertures closed by bonnets as described, so that the eduction valve may be applied and removed from the underside of the cistern and the pump plunger may be applied and removed from the upper side of the cistern, as set forth.

49,098.—Refrigerator or House for Preserving Animal and Vegetable Substances.—J. Hyde Fisher, Chicago, Ill.:

I claim the spaces, a a, at the sides of the flooring, D, between the upper and lower compartments, B C, of the house in combination with the aprons, H H, flue, F, and ventilator, G, all arranged substantially as and for the purpose set forth.

I also claim the inclosed waterproof flooring, D, provided with side strips, a, and a spout, E, for the purpose specified.

49,099.—Diagrams for Testing the Value of Mutilated Currency Notes.—Leander Fox, New York City:

I claim the transparent diagrams lined and spaced as herein described, and for the purposes set forth.

49,100.—Lock for Piano.—E. L. Gaylord, Terryville, Conn.:

I claim the two segment bolts arranged so as to work from a common center and operated through the medium of the tumbler connected with them, substantially in the manner as and for the purpose herein set forth.

49,101.—Lock.—Charles T. Gibson, Baltimore, Md.:

I claim, First, A lock which is provided with a movable sealing bar, C, and tongue, S, adapted for securing a hasp, or its equivalent, upon the frame of the lock outside of the case thereof, substantially as described.

Second, The swinging bar, C, in combination with a tongue, S, and extension, B2, of the lock case substantially as described.

Third, Constructing the laterally swinging bar, C, with a tongue, d', on its free end, in combination with a spring bolt, e, substantially as described.

Fourth, Applying the tongue, S, which receives the hasp, D, to the extension, B2, of the lock frame, in combination with a bar, C, and latch or bolt, e, substantially as described.

49,102.—Feathering Paddle Wheel.—Albert Gilman, Charlestown, Mass.:

I claim the stationary ring guide or track c c, fastened to the side of the vessel for the purposes set forth, substantially as described.

In combination with the rocking or rotating paddles, provided with arms, a, rigidly fastened to the paddle axles, b, I claim the fixed or stationary ring guide or track, c c, in which the pins or pivots of the arms travel to govern the position of the paddles.

49,103.—Stirrup.—John S. Gould, Allegheny, Pa.:

I claim the combination of the roller, A, with the joints, B, constructed, arranged and operating substantially as herein described, and for the purpose set forth.

49,104.—Cotton Chopper, Cultivator and Drill.—Joel A. Hall, Keokuk, Iowa:

I claim, First, In connection with a frame, A, the adjustable handles, B C, arranged and operated as above described and for the purpose set forth.

Second, The clamp frame, f, hoe, g, and adjusting segment, g, combined as above described.

Third, The combination of the plow-share or point, v, guide blade, w, and pivoted wings, x x', substantially as and for the purpose set forth.

Fourth, The plow-share, v, cutting blades, x and x x', adjusting rod, y y' and y'', arranged as above described and for the purpose set forth.

Fifth. The arrangement of the hopper, r, distributing spout, S, with the cultivator, in the manner and for the purpose described.

49,105.—Brick Mold.—James A. Hamer, Reading, and Thomas Lippincott, Philadelphia, Pa.:

I claim the combination and arrangement of the levers J J, and the rods, H H and I I, with the side pieces, B B, and end pieces, C C, of the combined mold for the expansion and contraction of the said pieces, B B, and partitions, D D and D' D', substantially in the manner and for the purposes above set forth.

Second, Combining the rods, K, with the end pieces, C, and side pieces, B, for opening and closing the said end pieces, substantially as described and for the purpose specified.

Third, The combination of the lock strips, M, with the side pieces, B B, and partitions, D D, substantially in the manner and for the purpose above described.

Fourth, The combination of the levers, J J, with the lock strips, M, by means of the cams, n, sliding pieces, O P, and bell cranks, a, substantially as described and for the purpose specified.

49,106.—Process for Disintegrating Vegetable Fibers.—Charles Heaton, New York City:

I claim the process herein described of treating vegetable fiber, by subjecting it for a short time to a high degree of heat without the presence of alkali, and afterward immersing it in an alkaline solution at a lower temperature.

[The object of this invention is to separate gummy, silicious and other surrounding matter from vegetable fiber in a simple and expeditious way, part of the means used for this purpose being mechanical and part chemical, in conjunction with heat.]

49,107.—Railway Chair.—John L. Hills, New York City. Antedated July 21, 1865:

I claim, in combination with the wrought iron chairs, C a b, the brace bar, E, extending from chair to chair, and held in notches between the abutting ends of the rails, as herein shown and described.

49,108.—Tempering Steel Springs.—William Hughes, Bloomington, Ill.:

First, I claim the within described process of hardening cast-steel springs, by first coating them with soap, or its equivalent, before heating, and cooling them off, as before described.

Second, The hydrated solution above set forth, and composed of the ingredients herein specified, for the purpose of hardening springs of either cast or spring steel.

49,109.—Wood-bending Machine.—Philip Hurm, Hamilton, Ohio:

I claim the former, A, stirrups, E, key, F, shear bars, D I, bolt, J, pins, G, and wedges, O, arranged and operating together substantially as described.

49,110.—Trace Trimmer.—William L. Hutchinson, Burlington, Iowa:

I claim a device for trimming traces and other straps, constructed and operating substantially as herein shown and described.

[The object of this improvement is to facilitate the trimming or dressing of leather traces and other straps, and for harness and other purposes. The invention consists in the combination of two springs—namely, a lateral and a vertical self-adjusting spring—with an adjustable cutter or knife, the construction being such that on simply drawing the trace or strap between the springs it will be very smoothly and rapidly trimmed upon its edges.]

49,111.—Cultivator.—Hanford Ingraham, Naples, N. Y.:

I claim the transverse beams, A and B, and center forward beam, a, in connection with the knee braces, C, as constructed and arranged substantially in the manner and for the purpose set forth.

49,112.—Light Wagon.—H. L. Isham, Plattsburg, N. Y.:

First, I claim the securing of the ends of the leaves, a, of the springs to the bolster and axle, in the manner substantially as herein set forth.

Second, In combination with the leaves, a, secured as hereinbefore specified, I further claim the safety straps, G, attached to the bolster by dovetail plates, d', and grooves, c', in the manner described.

49,113.—Padlock.—H. Jackson, New York City:

I claim the sliding frame, C, provided with the bolt, D, and lever, E, with the spring, F, bearing against the latter, the lever being notched at its upper edge to catch against the projection, e, at the upper part of the case, substantially as and for the purpose set forth.

I further claim the pivoted catch, G, connected with the frame, C, as shown, to operate simultaneously therewith, for the purpose specified.

49,114.—Water Wheel.—Andrew Jamison, Taylorstown, Pa.:

I claim constructing the buckets of an overshot water wheel in two parts, F F', the former, F, being so arranged as to contain or hold the water so that it can act upon the wheel by gravity, while the latter, F', are provided with openings, c, and so arranged as to admit of the water acting upon or against them by impact, and then allowing it to pass into the inner parts, F, of the buckets below, substantially as described.

[This invention relates to a new and useful improvement in overshot water wheels, and it consists in constructing the buckets in such a manner that they will receive the force of the water, and the wheel be driven by the impact as well as by the gravity of the water.]

49,115.—Blacking-box Holder.—Charles E. L. Jelliffe, Williamsburgh, N. Y.:

I claim a blacking box having a handle or holder attached thereto, substantially in the manner described and for the purpose specified.

[This invention relates to a novel and very useful device for a holder for boot-blacking boxes, the object of which is to prevent the hands from becoming soiled when the blacking is used.]

49,116.—Valve Cock.—Nathaniel Jenkins, Boston, Mass.:

I claim the employment of an adjustable stop or regulator, N, or its equivalent, in combination with the follower of a valve cock, substantially as set forth and for the purpose set forth.

49,117.—Grain Drill.—David J. Jones, Sadsbury, Pa.:

First, I claim the slides, M, with their openings, y y, adjustable plates, N, combined with the hoppers, I, and operated substantially as and for the purpose specified.

Second, The crank axle, E', levers, P, slides, M, combined and operating substantially as described.

Third, The levers, F, with the pins, m, and the slides, M, with the notches, x, constructed and operating in combination with the levers, K, substantially as and for the purpose set forth.

Fourth, The drums, I, with their cords, b and d, operating in combination with the drill feet, G, and beveling plates, J, substantially as specified.

Fifth, I claim operation for depositing grain, seeds, etc., in the ground, in such quantities and at such intervals as may be desirable.

Sixth, The drill fort, G, hung to the frame, and combined with the cord, t, as and for the purpose specified.

49,118.—Boot and Shoe.—Isaiah T. Jones, Sandwich, Mass.:

I claim beveling under the inner surface of the part, B, so as to aid in retaining the filling, D, and to allow the pegs or equivalent fastenings, E, to be placed very near the edge, in combination with the thin lugs or parts, B', extending inward from B, under the filling piece, D, substantially as and for the purpose herein set forth.

49,119.—Machine for Making Paper Board.—John F. Jones, Rochester, N. Y.:

First, I claim the combination of an open wire mesh or perforated cylinder, B, wire apron, E, and pressure rollers, D D, for forming paper board in a continuous or indefinite length, substantially as set forth.

Second, In paper-making machines, the combination of the suction box or boxes composed of the rollers, I I and K, operating substantially in the manner and for the purpose herein set forth.

49,120.—Sofa Bedstead.—Francis Keller, New York City:

I claim the combination of the back, C, seat, a, flaps, E, hooks, e, hinges, C b f, when constructed and arranged as and for the purposes herein specified.

[This invention relates to an improved sofa bedstead, and it consists in a peculiar construction of the same, or in an improved arrangement of its parts, whereby a better bed is obtained than usual in such devices, and a more convenient and desirable article of the kind obtained.]

49,121.—Corn Planter.—Philip H. Kimball, Prophetstown, Ill.:

First, I claim the peculiarly shaped runners or shoes, L L, constructed and arranged specifically as described, for opening a furrow and covering the seed therein, substantially as herein set forth.

Second, I claim so combining the runners, L L, of my machine with the weighted levers, N N, connected to the framework thereof, as that each runner and coverer may, under an adjustable degree of pressure, act and operate independently of the other, substantially in the manner and for the purpose herein set forth.

I claim in combination with the sided slide, N, of my improved corn planter, the pinions, h h, operating against the edge thereof, substantially as and for the purpose herein set forth.

Fourth, I claim, in combination with the pivoted roller scrapers, A, and the platform and driver's seat of my improved corn-planting machine, as described, the foot lever, R, for the purpose of operating said scrapers, substantially in the manner herein set forth.

49,122.—Machine for Rounding and Polishing Balls.—John Loper Knowlton, Philadelphia, Pa.:

First, I claim the method herein described of imparting to the ball while being ground or turned, an intermittent rotary motion in two or more directions by means of four (more or less) longitudinally sliding rotary mandrils, D D', radiating from a common center and provided with chucks at their inner ends, or any other equivalent means, constructed and operating substantially as and for the purpose set forth.

Second, The combination of four (more or less) chucks, E E', made to grasp the work at stated intervals with a grinding wheel or milling tool, applied and operating substantially as and for the purpose described.

Third, The combination of the segmental rack, C, pinion, d, shaft, e, and weighted lever, f g, arranged and operating in connection with the pivoted frame, G, and polishing wheel, F, in the manner described, to regulate the pressure of the said wheel against the ball to be polished.

Fourth, The cams, o p, and toes, s t, in combination with the carriages, C C', chucks, E E', and weighted levers, s9 t8, or their equivalent, constructed and operating substantially as and for the purpose described.

49,123.—Drill for Well Boring.—O. B. Latham, Seneca Falls, N. Y.:

I claim the adjustable reamer, C in two sections, the screw, e, plates c, the key and gibs, in combination with the drill and shank, arranged and operating conjointly, substantially as and for the purpose set forth.

49,124.—Journal Box.—Henry A. Lee, Worcester, Mass.:

I claim the application to journal boxes of the set screws, D, within one of the shells or halves of which the journal box is composed, substantially in the manner and for the purposes specified.

49,125.—Steam Boiler.—David Lister, Carbondale, Pa.:

I claim a pipe, B, arranged near to the bottom or to that surface of a steam boiler from which the sediment is to be removed and perforated with a number of holes, a, in the manner and for the purpose substantially as herein shown and described.

49,126.—Revolving Car.—Daniel Lott, Lottsville, Pa.:

I claim the rolling receptacle, A, mounted by a horizontal shaft, B, upon wheels, C, which run freely upon the said shaft, and drawn by means of a frame in which the ends of the said shaft are journaled.

49,127.—Musical Instrument.—Thomas Loud, Philadelphia, Pa.:

I claim the use of a rail placed in front of the key board of a reed organ, melodeon or other musical instrument and connected with the device or devices usually employed therein for covering the chamber containing the reeds or other devices used for producing musical sounds, arranged and operating substantially as herein described and for the purposes specified.

[This invention relates to the mode of opening and closing the swells of melodeons, reed organs, etc., and consists in a simple and novel arrangement of parts whereby it can be accomplished while the feet are employed in working the bellows, and without removing the hands from the keys, the importance and advantage of which are self-evident to all performers on such instruments.]

49,128.—Screw Wrench.—Horace W. Love, Brooklyn, N. Y.:

I claim a single diagonal adjustable screw wrench, constructed and capable of operating substantially as described.

49,129.—Drill.—John M. May, Janesville, Wis.:

First, I claim bevelling the bit or cutting edge of a drill all on one side or chiefly on one side to give the drill a slightly rotating motion in a horizontal direction at each blow of the drill, substantially as described.

Second, A swivel formed of parts, E E and G, when used to allow a drill or a punch drill to revolve in the path of a horizontal direction, substantially as described.

Third, Using a spring guide to catch pieces of rock, and other substances that fall into a drilled well and obstruct the operation of a drill, substantially as and for the purposes described.

Fourth, Screw or strainer when used in a pump drill, substantially as and for the purposes described.

49,130.—Breech-loading Fire-arm.—Edward Maynard, Washington, D. C.:

First, I claim the formation of an outlet, in or through the cone seat or recoil block of breech-loading fire-arms to permit the free escape of gases leaking from the cartridge or gun barrel at the explosion of the charge therein, substantially in the manner herein set forth.

Second, The use and combination of a central recoil rod, B, with a movable cone seat, A, and the loading aperture of a breech-loading gun, substantially in the manner and for the purpose herein set forth.

49,131.—Manufacture of Felted Fabrics.—Edwin D. McCracken, New York City:

I claim the use of the fiber of cane or reed, in combination with wool or fur, or with both wool and fur, in the manufacture of felted goods, substantially as herein described.

49,132.—Surgeon's Operating Table.—Thomas McIlroy, New York City:

First, I claim the table hinged to and supported upon the frame, A, and provided with a hinged portion, B', and hinged leg extensions, E E', each section, to wit: B B' E and E, being provided with devices for vertical adjustment, substantially as described.

Second, I claim the latterally adjustable leg extension, by means of the pivot joint, F, to support the leg in its laterally deflected position.

In combination with the table, B, I claim the hinged back support, I, J, with its device for vertical adjustment, substantially as described.

49,133.—Machine for Cutting Screws.—John A. Merriman, Chicago, Ill.:

First, I claim closing dies by the use of the lateral sliding bearings, K, acting directly upon the dies by means of inclines, operating substantially as and for the purposes herein specified.

Second, The sliding bearings, K, the levers, i, and the dies, g, all arranged and operating substantially as and for the purposes herein set forth.

Third, The latch or strap, p, in combination with the sliding bearings, k, and the dies, g, substantially as herein shown and described, for the purpose set forth.

49,134.—Mode of Hoisting and Lowering Window Sash.—John M. Merryman and Kilby Ferguson, Indianapolis, Ind.:

First, In combination with the upper and lower moveable sash of a window, a cord win lass and pulleys, or equivalent devices, so that the said sash may be raised or lowered at pleasure, and perfectly balanced, when the windlass is fixed within the window casing.

Second, The combination of a cord, windlass and pulley, with the upper and lower sash of a window, or equivalent devices, so that the said sash may be raised or lowered at pleasure, and perfectly balanced when the windlass is attached to the lower sash.

Third, In combination with a hoisting and lowering device applied to one edge of a window sash, the friction roller, M M, applied to diagonally opposite corners of said sash for the purpose set forth.

Fourth, In combination with the windlass, A, for raising and lowering window sash and the ratchet and pawl, B R, the friction brake, D, substantially as described.

Fifth, The lock, P, or its equivalent, in combination with the ratchet and pawl of the windlass, A, for the purpose of facilitating the working of the upper sash, and for locking the window with the said upper sash at any desired point of elevation.

49,135.—Washing Machine.—John H. Monsees, Smith City, Mo.

I claim the particular combination and arrangement herein described, of the tub, A, oblique plunger, C, oscillating arms, B, supporting bars, d, lever frame, D, inclined abutment, c', and guard boards, D' D'', as and for the purposes herein specified.

[This invention relates to a new and improved clothes washing machine, of that class in which a swinging plunger is used, and the clothes subjected to a pressure or squeezing action. The object of the invention is to obtain a washing machine of the class specified, which will be simple in construction, and possess advantages over others of the same class, as hereinafter referred to.]

49,136.—Summer Stove.—Francis Morandi, Boston, Mass.:

I claim, First, In portable summer stoves or furnaces, arranging a perforated cover, K, upon the smoke pipe so as to enable one to discharge the smoke into, and use the stove with a kitchen stove or range, without requiring any change in the latter, substantially as described.

Second, I also claim fixing a platform or heating surface, H, upon the horizontal part of the smoke pipe, substantially as and for the purpose described.

Third, I also claim the combination of a summer stove or furnace, with a platform or heating surface, H, on the pipe, substantially as described.

[The object of this invention is to provide a portable, convenient and economical summer stove, for domestic and other uses. It consists in a fire chamber or furnace, which can be connected either with another stove, so as to discharge the products of combustion into its flues, or else with a chimney or other flue; the fire chamber being provided with a boiler hole, and the discharge pipe being made to support a hot air or combustion chamber whose top forms a heating surface on which vessels may be set, as upon any other heating surface.]

49,137.—Car Spring.—Wm. Neubauer, Philadelphia, Pa.:

I claim constructing a spring when made of plates, or sheets of metal, with the resilient parts, on angles from the central position of the spring plates, which compose the combined spring, and decreasing the length of the said resilient parts of each plate, in order, from the outer plates, for the purpose of increasing the strength of the spring and imparting increased elasticity to the same, substantially as described.

I also claim varying the angles of the resilient parts of the spring in such a manner that there shall be spaces, b, extending over the whole surface of the spring plates, between their points of contact, substantially as represented, for the purpose of giving increased elasticity to the spring, substantially as above described.

49,138.—Churn.—Abel Newbrough, Madisonville, Ky.:

I claim the frame, F, pulleys, P P', belt, D, the crank, B, and staff, A, and adjustment as shown at b, the several parts being constructed and arranged in relation to the churn, C, as and for the purpose specified.

41,139.—Lathe for Turning Heads of Nails, Tacks, Etc.—Wm. H. Nichols and Horatio H. Abbe, Chatham, Conn.:

I claim, First, The employment or use of the cap, J, attached to the arm, K, arranged substantially as shown, in such relation with the mandrel, C, to admit of the head being readily adjusted on the mandrel as set forth.

Second, The combination of the cap, J, milling tool, T, cutter, Q, and thimble, H, all arranged and combined with a mandrel, C, to form a new and improved lathe, for the purpose specified.

[This invention relates, first, to a new and improved means for chucking the heads to be turned and ornamented; second, to a milling tool for milling the head; third, to a cutter for turning the head, and fourth, to a thimble for discharging the finished head from the mandrel; all being constructed and arranged in such a manner that the device may be operated with the greatest facility by children equally as well as by adults.

49,140.—Molding Crucible.—George Nimmo, Jersey City, N. J.:

I claim, First, Manufacturing crucibles in a plaster mold, in the manner and for the purpose specified.

Second, I claim lever l, and rib, n, applied in the manner specified, to form the interior of a crucible contained within a revolving mold, as set forth.

Third, I claim the combination of the revolving chuck, c, plaster mold, d, lever, l, and rib, n, as and for the purposes specified.

Fourth, I claim mounting the lever, l, and rib, n, in the frame, g, in the manner specified, in combination with the countespoise, k, fulcrum, o, and stop, p, for determining the size of the interior of the crucible, as specified.

49,141.—Manufacture of Crucibles.—Geo. Nimmo, Jersey City, N. J.:

I claim a crucible or pot of plumbago, with a lining or coating of clay, or clay and sand, or similar material, for the purposes and as specified.

49,142.—Pipe Coupling.—James Old, Pittsburgh, Pa.:

I claim the mode of connecting tubes or pipes of wrought iron or other metal (when so thin as not to admit of cutting screw threads sufficiently coarse to be easily united), by means of the use of a screw coupling, the male and female parts of which are united to the opposite ends of the pipe or tubing, by a very fine screw in the pipe or tube and coupling, and soldered around the pipe or tube and coupling, substantially as hereinbefore described.

49,143.—Breeching Strap Fastening.—A. W. Olds, Green Oak, Mich.:

I claim securing the breeching straps to shafts of carriages by means of a hook in one end of which the strap is looped, in combination with a fixed pin or staple of the shaft on which the hook is hung arranged together and operating substantially in the manner described and for the purpose specified.

I also claim in combination with the above, the use of a spring, substantially as and for the purpose specified.

49,144.—Bottle Stopper.—Robert T. Osgood, Orland, Maine.

I claim a concave cap covering the whole upper portion of a common cork stopple, with a pointed spiral wire attached to and within the cavity of said cap firmly, for the purpose of passing down into, but not through said cork, to aid in extracting it, and to prevent the breaking of the same, as are herein substantially set forth.

49,145.—Stand for Ladies' Figure.—Joseph R. Palmenberg, NewYork City.

I claim the arrangement and construction of a stand for ladies' figures, and similar articles, made in parts in the manner described and for the purpose substantially as set forth.

49,146.—Preserving Wood, Etc.—George Palmer, Littlestown, Pa.:

I claim, First, The apparatus and mode of applying the same for heating the inner and outer surface of timber, sufficiently to open the pores of the wood, and extract the sap and gaseous matter, as herein described for the purposes specified.

Second, I claim opening the pores of timber, by applying heat, in the manner herein described, so that oily, resinous, or bituminous substances will penetrate the wood to its fullest capacity.

49,147.—Composition for Frames, Bottles, Etc.—John T. Peet, Cincinnati, Ohio:

I claim the use of asphaltum, or rosin, with any suitable powder, to the end and for the purposes substantially as set forth.

49,148.—Lubricator.—Theodore G. Pelton, Lyons, Iowa, and James Brewer, Albany, Ill.:

We claim, First, Making the valve stem for oil cups in two parts, when constructed, arranged, and operating substantially in the manner described.

Second, In combination with the valve stem, constructed substantially as described, the spiral spring, L, and collar or pin, P, as and for the purpose set forth.

Third, In combination with the stem, constructed substantially as described, the grooves, m, as and for the purpose specified.

49,149.—Lock for Piano.—A. F. Pfeifer, Newark, N. J.:

I claim a lock provided with a supplemental bolt, E, pivoted to a sliding bolt, B, and arranged to operate in connection therewith in the manner substantially as described.

[This invention relates to a new and improved lock for desks, pianos, chests, the cases of sewing machines, etc, and it consists in the employment or use of a bolt pivoted to a sliding bolt, and arranged in such a manner as to turn over and catch into the plate which is attached to the lid or cover of the article to which the lock is applied, and at the same time be capable of turning back so as to pass out of the plate when the lock is unlocked.]

49,150.—Cotton Seed Planter.—Brown Platt, Pana, Ill., and Norman Platt, St. Louis, Mo.:

We claim, First, The shaft, M, armed with the pins, W, or their equivalent, revolving in the box, L, during the process of planting, in combination with the belt, D, armed with the pins, x, or their equivalent, and the roller, i, all acting for the purpose of stirring up the mass of seed contained in the box, L, and preventing the same from remaining or becoming a compact mass.

Second, We claim conveying the seed out of the box or reservoir upon a belt studded with metallic pins, or their equivalent.

Third, We claim the armed wheel, N', revolving immediately in front of the belt as it turns over the pulley, j, to pull the seed off of it.

Fourth, We claim the roller, i, attached to the box in the upper part of the orifice through which the belt passes through its front end, to prevent seed clogging at that point.

49,151.—Apparatus for Mashing, Boiling and Fermenting Grain.—E. F. Prentiss and R. A. Robertson, Philadelphia, Pa.:

We claim, First, The combination of the perforated malt supply pipe, a, the surrounding casing, b, and the double-rotating mixer, c, for mashing the malt, the whole arranged and operating substantially as shown and described.

Second, The combination of the adjustable pipe, d2, with the pipe, d, leading to the center of the bottom of the mash tub, and the distributor, d', for the double purpose of admitting water to said tub when necessary, and for drawing off the wort therefrom.

Third, The sparger, e, perforated as described and for the purpose specified.

Fourth, The combination and arrangement of the cistern, B, pipe f, column, g, and the perforated false bottom, i, in the manner and for the purpose substantially as described.

Fifth, The employment of the conical perforated false bottom, i'' and chimney, i, arranged and constructed substantially in the manner and for the purpose described.

Sixth, The combination of the boiler, B, pipe, f, and column, g, the latter having pipes, k and k', for the entrance and exit of steam or heated water, or cold water, for alternately heating and cooling the contents of B, the whole constructed, arranged and operating in the manner and for the purpose substantially as shown and described.

Seventh, The combination of the solid wooden float, O, with the return pipe, r, these parts being constructed, arranged and operating substantially as shown and described.

Eighth, The employment of the cooling and heating vessel, D, in connection with the mercury cup, n2, the inverted cup, n3, and the system of levers, the several parts being constructed as shown, and the whole arranged and operating substantially in the manner and for the purpose described.

Ninth, The combination and arrangement of the mash tub, A, boiling and cooling cistern, B, and fermenting tun, C, in the manner described, for the purpose of mashing, boiling, cooling and fermenting malt liquors.

49,152.—Composition for Lining Petroleum Barrels.—Robert Price, Jersey City, N. J.:

I claim the preparation of barrels or other vessels for containing and transporting petroleum oil or similar substances, substantially as described and for the purposes set forth.

49,153.—Coal Stove.—D. S. Quimby, Brooklyn, N. Y.:

I claim the arrangement of the hot-air flue, o p, and box, q, in combination with the heater, a, and flues, i k l, as specified.

I also claim the register, r, fitted as specified, in combination with the hot-air box, q, and pipe, p, for the purposes specified.

49,154.—Watch Regulator.—George P. Reed, Roxbury, Mass.:

I claim the application of the curved spring, c, and its adjusting screw, f, to the pointer, b, in combination with the application of the hair-spring pins or studs to the said spring, c, the whole being substantially as and for the purpose explained.

49,155.—Watch Escapement.—Geo. P. Reed, Roxbury, Mass.:

I claim the combination of the movable detent, e, and the spring, L, and stop, p, with the lever, D, carrying a fixed detent, o, and arranged in manner and so as to operate with the scape wheel and the impulse pallet of the balance wheel, substantially as specified.

49,156.—Manufacture of Axes.—Henry C. Reynolds, Manchester, N. H.:

I claim reducing the edge of the ax to the form desired when it is finished for use, and refining the steel at the same heat; the steel is welded to the ax, by means of dies, a and b, constructed and operated substantially as herein described.

49,157.—Azimuth Compass.—E. S. Ritchie, Brookline' Mass.:

I claim the combination of the light-converging cylindro-segmental lens, E, or its equivalent, with the limb or annulus, A, or its equivalents, and its sights, to be used on a magnetic compass, in manner substantially as specified.

I also claim the combination of the adjustable screen or shutter, M, or its equivalent, with the light-converging lens, E, combined with the fore sight of the annulus, A, or its equivalent, and for use substantially as hereinbefore specified.

I also claim the combination of the reflector, F, and the light-converging lens, E, or its equivalent, with the annulus, A, or its equivalent, and its fore sight, or fore and back sights, to be employed on a compass, in manner substantially as hereinbefore explained.

I also claim the combination of the indicators, g g, with the auxiliary sight, s, and the annulus, A, or its equivalent, its fore sight or fore and back sights, and the light-converging lens, F, the same being as specified.

I also claim the combination of the indicators, g g, with the two lenses, e f, or the same, and the auxiliary sight, s, and with the annulus, A, or its equivalent, its fore sight, or fore and back sights, and the light-converging lens, E, the same being as specified,

I also claim the combination of the indicators, g g, with the two lenses, e f, the prism, H, and the annulus, A, or its equivalent, its fore sight, or fore and back sights, and the light-converging lens, E, the same being as specified.

I also claim the combination of the index mark, h, or its equivalent, with the light-converging lens, E, the annulus, A, and the fore sight, C, or the equivalent thereof, the whole being arranged substantially in manner and for the purpose specified.

49,158.—Machine for Upsetting, Cutting and Punching Iron.—J. J. Rose, Elmwood, Ill.:

I claim combining in a complete and portable machine a device for shearing metal, a device for punching metal, and a device for upsetting tires, the several devices being constructed and arranged substantially as described.

[This invention consists in a novel arrangement of levers with clamps, a punch and a cutting device, whereby tires for wheels may be shrunk, and iron cut and punched, the whole forming a compact and portable machine convenient for a smith shop.]

49,159.—Sash Fastener.—A. H. Rowe, Hartford, Conn.:

I claim the revolving slotted cam, C, in combination with the case, A, and spring bolt, B, constructed and operating substantially as and for the purpose set forth.

[This invention consists in a revolving slotted cam, arranged in a circular case, in combination with a radially-sliding spring bolt, in such a manner that when the device is applied to a sash by turning the cam in one direction, the spring bolt is drawn in and the sash unfastened, allowing it to move up or down, and by releasing the cam the bolt is allowed to drop into suitable sockets made in the side of the window frame, at suitable intervals, and in this position it is locked by the cam, and the possibility of a spontaneous unfastening of the sash is avoided.]

49,160.—Photographic Lens.—Joseph Schnitzer, New York City:

I claim, First, A lens, A, constructed of a triplet front lens, B, and doublet back lens, C, substantiallly as herein set forth.

Second, The correcting lenses, h i, and the disk, F, or its equivalent, applied in combination with a lens, A, substantially as and for the purpose specified.

Third, The disk, F, or its equivalent, furnished with one or more correcting lenses, h i, in combination with the diaphragm, G, and lens, A, constructed and operating substantially as and for the purpose described.

[The object of this invention is a photographic lens, which combines with a short focus an angle of eighty degrees, more or less, and which is so arranged that its focus can be adjusted, and that the same instrument can be used for pictures of different size.]

49,161.—Cutter for Wood-turning Lathe.—James Shannon, Cohoes, N. Y. Antedated July 30, 1865:

I claim the construction of a cutting tool, by the combination of a gouge or gouges, G, with a toothed cutter, B, formed as described, and attached to a revolving disc, substantially as set forth in the within specification.

49,162.—Railway Frog.—Theodore Sharts, Albany, N.Y.:

I claim the employment or use of a movable or detachable tongue, applied to a frog, in the manner substantially as and for the purpose herein see forth.

[This invention relates to a new and improved frog for single-track railroads, and it has for its object the dispensing with the ordinary switch, and, consequently, with a switchman.]

49,163.—Key-bolt Connection of Car Trucks.—J. J. Sherman, Albany, N. Y.:

I claim, First, The elastic key-bolt connection for railway carriages, when arranged and applied to operate against lateral or other horizontal impulse, substantially as described.

Second, Surrounding the pivot or key-bolt connections with india-rubber or other elastic substance, confined within metallic cups or boxes, in such manner as to admit of a horizontal motion of said key-bolt, but no vertical motion, substantially as described.

49,164.—Horse Rake.—S. M. Sherman, Fort Dodge, Iowa:

I claim the combination of the S-formed wooden teeth, E, bars, e e, arms, f f, link, F, and lever, G, all as specified.

[This invention consists in constructing the teeth of the rake of wood, bent or curved in S-form, and arranged or applied in such a manner as to form a cheap and durable horse rake, and which will operate perfectly, and be capable of being manipulated with the greatest facility.]

49,165.—Coal Stove.—James Spear, Philadelphia, Pa.:

I claim the damper, C, with a hole in the center, or its equivalent, placed inside a stove, having direct draft, and arranged and operated in the manner and for the purpose herein set forth.

49,166.—Ditching Machine.—Nathan Starbuck, Wilmington, Ohio:

I claim the wheel, E, provided with flanges, c, projecting beyond the rim, a, in combination with the plow, F, and scraper, I, substantially as and for the purpose specified.

I also claim the inclined planes, L L, attached to the scraper bar, H, when used in combination with the wheel, E, plow, F, and scraper, I, for the purpose set forth.

I further claim placing the wheel, plow and scraper within a frame, C, placed or arranged within a frame, A, substantially as and for the purpose specified.

[This invention relates to a new and improved machine for excavating ditches, and it consists in the employment or use of a whee provided with flanges for cutting the sides of the ditch, a plow for raising the earth between the cuts made by the wheel, and a scraper and inclined planes for taking the earth from the wheel and discharging it to the sides of the ditch.]

49,167.—Window Glass.—Thomas D. Stetson, New York City:

I claim as a new article of manufacture double or duplex glass tightly joined at or near the edges and adapted to serve in the manner herein set forth.

49,168.—Adding Machine.—T. T. Strode, Mortonville, Pa.:

I claim the revolving disk, A, marked with figures on its circumference and provided with a cam groove, c, and with cavities, p, in combination with the slotted dial, C, and index, D, constructed and operating substantially as and for the purpose set forth.

49,169.—Calendar Clock.—T. T. Strode, Mortonville, Pa.:

I claim the slide, B, marked with the names of the months and provided with openings, h, to operate in combination with the wheel, A, marked with figures from 1 to 31, and provided with concentric grooves, e, substantially in the manner and for the purpose herein set forth.

49,170.—Closing Hand-hole Plates in Steam Boilers.—Joseph R. Taylor and Horace A. Towne, Centralia, Ill.:

We claim the plug, B, inserted in the boiler plate, in combination with the cap, C, and clamp, D, substantially in the manner and for the purpose herein shown and described.

[This invention consists in the use, for closing hand holes in steam boilers, of a plug secured permanently in the boilers and bored out to give access to the interior of the same, in combination with a cap fitting on the surface of the plug with V or bell joint, and held down by a movable screw clamp, in such a manner that by taking or receiving said screw clamps the cap can be removed, and when the cap is replaced, a tight joint can be produced without the use of india-rubber or other costly packing.]

49,171.—Method of Preventing the Breaking of Glass by Exposure to Heat.—Eli Thayer, Worcester, Mass.:

I claim the non-conducting lining when applied to the surface of glass exposed to fire or to a high heat, substantially as set forth,

49,172.—Steam Generator.—Eli Thayer, Worcester, Mass.:

First, I claim the tubular supporters of grates, substantially as set forth.

Second, In combination with their supporters, I claim the extension or continuation of the pipe or pipes into the combustion chamber, substantially as set forth.

Third, The combination of these supporters with the screen grates or bars, resting upon them, and also with the sediment extractor.

49,173.—Sled Brake.—Levi H. Thomas, Waterbury, Vt.:

First, I claim the vibrating self-adjusting bar, attached to the sliding frame, the same being connected with the levers and so operating the grong or dogs that they will adjust themselves to the density of the substance they come in contact with.

Second, I claim placing the pins, f f, in such a position with the movible hooks, e e, as to always insure their taking hold to break the force of the load when pressing forward.

49,174.—Steel Trap.—Levi H. Thomas, M. D., Waterbury, Vt.:

I claim the jointed pan so constructed and arranged as to embrace both ends of the jaws, and hold them closed.

Second, I claim holding the trap set, the pan forming the catches under the angles of the jaws.

Third, I claim placing springs within the circumference of the jaws acting directly upon the pan, whereby they hold the trap either set or sprung.

Fourth, I claim the mode of constructing animal traps, whereby the pan forms the levers for setting.

Fifth, I claim the jointed double pan, in combination with the spring and jaws, the same being constructed and operating in the manner herein described for the purposes specified.

49,175.—Manufacture of Wrought Iron.—Robert Thomas and Giles Edwards, Columbiana, Ala.:

We claim extracting wrought iron direct from its ore or from the oxide of iron, by subjecting a layer of pulverized ore, which is mixed with carbonaceous matter, to the action of heat and balling the metal as rapidly as it is set free from the surface of said layer, substantially as described.

Second, Conducting the within-described process, substantially as described, upon an inclined or porous surface, substantially as set forth.

49,176.—Egg Beater.—Howard Tilden, Boston, Mass.:

I claim a case or box provided with a rotating wheel midway between the ends, with floats arranged diagonally to its axis, substantially as described, so that the wheel will be turned by the contents of the box as it flows from end to end, when the box is shaken.

49,177.—Drill for Wells.—J. H. S. Tuck, Cambridge Ohio:

I claim locking drills for boring oil or other wells to their rods or shafts, substantially as and for the purpose above described.

49,178.—Cutting and Grasping Shears.—Samuel W. Valentine, Boston, Mass.:

I claim a cutting and grasping shears having a yielding hold fast, for the purpose substantially as set forth.

49,179.—Burning Hydro-carbon Oils.—Delevan D. Van Norman, Lester B. Brown and Enoch R. Morrison, Petroleum Centre, Pa.:

First, We claim placing in the furnace or fire box of a steam boiler a retort for generating gas from petroleum or other hydro-carbon liquids, the retort being surrounded by a steam chamber, from which superheated steam may be used with a small portion of carbureted hydrogen gas for fuel.

Second, We claim placing a copper or other metal coil of pipe in the bottom of the retort, through which superheated steam is admitted, to hasten and evolve the gas from hydro-carbon liquids.

Third, We claim one or more pipes leading from near the top of the retort down under the bottom of the same, for the purpose of intensifying the heat in the retort, and thereby dispensing with fire in the pan after the steam in the boiler is at working pressure.

Fourth, We claim the smoke jacket surrounding the retort and steam chamber, in combination with the fire pan, whereby the smoke of the burning liquid is brought in contact with gas and steam, and is entirely consumed.

Fifth, We claim the float valve placed in the retort for controlling the supply of petroleum or other liquids for generating gas, in the manner herein set forth.

Sixth, We claim the manner of separating the water from the crude oil, by pressing a coil of steam pipe through the tank, as described.

Seventh, We claim the perforated coil or curcular, q, in the top pipe of the retort, for the purpose of letting a small portion of steam into the top of the gas-generating retort, G', to commingle with the gas as it escapes for ignition.

Eighth, We claim the arrangement of iron or other suitable metallic pipes for superheating steam in the furnace of a steam boiler, as herein described, in combination with the gas-generating retort.

Ninth, We claim the construction and arrangement of the steam-pressure governor valve, in combination with the spring balance, as and for the purposes set forth.

49,180.—Dogs for Lathes.—Wm. Vine, Norwalk, Conn.:

First, I claim the arrangement of the two adjustable plates, A and B, in the manner and for the purpose substantially as herein described.

Second, The arrangement of the corrugated faces, or their equivalent, substantially as set forth.

49,181.—Cutting Soles of Boots and Shoes.—J. H. Walker, Worcester, Mass.:

First, I claim cutting and beveling the rear end of tap soles at one and the same operation, substantially as set forth.

Second, I claim the use and employment of the double curved knife, with an irregular edge, b c, substantially as and for the purposes set forth.

49,182.—Picker Staff Connection in Looms.—Warner Weiland, Deakam, Mass.:

I claim the arrangement, substantially as described, of the picker staff and the socket, the bearings and the pin of its carrier.

49,183.—Harvester.—Thomas Welch, Churchville, N. Y.:

First, I claim the combination and arrangement of the box, D, constructed, as shown and described, with the crank pin, C, socket, d, wheel, or its equivalent, and driving shaft, A, of reapers and mowers, for the purposes specified.

Second, The joints, I and J, constructed and arranged as shown and described, in combination with the crank box, D, and cutter bar, F, for the purpose set forth.

49,184.—Reaping and Mowing Machine.—Thos. Welch, Churchville, N. Y.:

I claim the arrangement of the ratchet, R, fixed, D, the ground wheels, B, in combination with the adjustable spring pawls, P rigidly attached to the main axle, A, substantially as and for the purposes described.

Second, The primary pawl bar, C rigidly attached to the main axle, A', in combination with the adjustable or sliding auxiliary bar, C', the independent spring pawls, p, and steady pin, g, constructed, arranged and operating in the manner and for the purposes shown and described.

Third, I claim the employment or use of the circular stock, J, and its slide, S, the latter having a ratchet edge, and both being arranged and operating in the manner shown and for the purposes specified.

Fourth, The roller, T, in combination with the circular slide, S, as shown, and for the purposes set forth.

Fifth, In combination with the stock, J, and brace, L, the brace bar, M, arranged in the manner and for the purposes set forth.

Sixth, The lever, t, and ratchet wheel, w, constructed and arranged as shown, in combination with the circular ratchet slide, S, and locking latch, r.

49,185.—Crank Pin Boxes.—Thomas Welch, Churchville, N. Y.:

First, I claim the combination and arrangement in harvesters of the set screw, S, and boxes, B and D, with the head, A, the bearing face between the latter and box, D, being made convex, substantially in the manner and for the purposes set forth.

Second, In combination with the crank head or box, A, of harvesters, the chambered cap, C, constructed, arranged and operating substantially in the manner and for the purposes shown and described.

49,186.—Harvesting Machine.—Milton A. Wheaton, Snisun City, Cal.:

First, I claim, in combination with the cam teeth, B, the employment or use of the friction rollers, D D', and the jointed vibrating rods, E E', or their equivalents, for the purpose specified and set forth.

Second, I claim the employment or use of the collars, H H, or their equivalent, with the depression and projection, substantially as and for the purpose specified.

49,187.—Stamping and Crushing Mill.—J. D. Whelpley and J. J. Storer, Boston, Mass.:

We claim, in combination with the radial arms, or disks, of a grinding, crushing or pulverizing mill, the employment of a plate, paddle, or beater, A, constructed of chilled cast iron, incorporated in casting, with wrought iron or other suitable malleable metal, substantially as set forth and for the purposes described.

47,188.—Gas Regulator.—Joseph S. Wood, Philadelphia, Pa.:

First, I claim passing the gas through the valve, H, by means of the openings, h h', substantially as described.

Second, I claim the valve, H, in combination with the stop, K, substantially as described.

Third, I claim the combination of valve, H, stop, K, and set screw, m, substantially as described.

49,189.—Bed Bottom.—William Workman and C. F Swain, Ripon, Wis.:

We claim connecting the straps, C, having the slats, B, attached

thereto, or the slats themselves, to the rods or projections, c, in such a manner as to keep said slats extended, and employed in combination therewith the springs, a a, and cross pieces, A A, substantially as and for the purpose herein set forth.

49,190.—Straw Cutter.—George T. Wright, Cincinnati, Ohio:

I claim the arrangemont of the ratchet wheel, O. pawl, P, in combination with the slotted arm, R, and perforated disc, S, for graduating the rotation of the feed rollers, K, in the manner described.

49,191.—Machine for Cutting Rings from Ivory.—Chas. H. Bassett (assignor to The Birmingham Button Company), Birmingham, Conn.:

I claim forming rings from any material out of which buttons or other circular articles are cut, by cutting them from that portion of the material which is exterior to the button, and at the same operation with the cutting of the button, by the means substantially as described.

49,192.—Process of Varnishing and Polishing Wood.—George Bricker, Sr., Newville, Pa., assignor to himself and George B. Hammer, Harrisburg, Pa.,

I claim the process herein described of varnishing and polishing wood, substantially as set forth.

49,193.—Beater Press.—L. C. Field (assignor to himself, J. P. Frost and W. S. Bellows), Galesburg, Ill.:

I claim, First, The two levers, F F, employed in combination with the rope, H, beater, D, and notches, g and r, in the manner and for the purpose set forth.

I also claim the standards, n n, on the beater, D, when used in combination with the levers, F F, and rope, H, for the purpose specified.

I also claim the windlass, E, composed of two drums, d h, when used in combination with the eccentric, j, to operate either the levers or beaters, at the will of the attendant, as described.

I also claim the ways or track, I, at the bottom of the press box and arranged substantially as shown for the discharge of the bale from the press box.

49,194.—Reaping Machine.—Henry Fisher (assignor to C. Aultman & Co.), Canton, Ohio:

I claim swinging and dumping table, G, operated automatically, such as herein described and represented.

I also claim in combination with a swinging and dumping table, the hinged section, d, at its front edge, as and for the purpose substantially as herein described.

I also claim in combination with a swinging and dumping or dropping table, a shield, or holder, operating in connection therewith, as and for the purpose described.

49,195.—Starting Cars.—A. F. French (assignor to himself and Ed. Chas. Terrill), Franklin, Vt.:

I claim the lever, F, pawl, c, in combination with the ratchet wheel, d, draught pole, D, and with the axle or wheel of a street car or other vehicle, constructed and operating substantially as and for the purpose set forth.

[This invention consists in the application of a lever pawl and ratchet, in combination with the draught rod or draught chair, and with the axle of a stretcher or other vehicle, in such a manner that in starting the car the strain exerted by the draught animal or animals is increased by the purchase of the lever, and the operation of starting the car or other vehicle is rendered comparatively easy, and can be effected with much less exertion for the draught animal or animals than by the ordinary arrangement.]

49,196.—Steering Apparatus.—Nathan Richardson (assignor to himself and Eli F. Stacy), Gloucester, Mass.:

I claim in a steering apparatus made with a worm gear on the rudder head, and operated by means of worms or endless screws meshing therein, the arrangement of said screws outside of the periphery of said gear and substantially in the plane, as and for the purpose specified.

Also arranging the endless screws with reference to the gear on the rudder head, so that by forcing the screws toward the center of the rudder head it will be prevented from lateral motions.

49,197.—Life Boat.—A. L. Shears, Flint, Mich., assignor to himself and H. T. Woodman, Dubuque, Iowa.

I claim the general arrangement of the boat herein described of the air chambers or spaces for storage of provisions, etc., water, scuppers and thwarts susceptible of being raised or lowered at pleasure for communication with the air chambers of the boat, arranged together and operating substantially in the manner and for the purpose specified.

[This invention relates to some important improvements in life boats, whereby their efficiency is much increased, and the safety of its passengers more insured than with such boats as heretofore constructed.]

49,198.—Salve.—Wm. Slape, Salem, N. J., assignor to himself and H. S. Marsh, Philadelphia, Pa.:

I claim a salve composed of the within-named ingredients, composed substantially as set forth.

49,199.—Steam Boiler.—Wm. Mont Storm (assignor to himself and R. Charlton Mitchell), New York City:

First, I claim the relative arrangement of the parts of my steam boiler, substantially as follows, viz: In a cylindrical horizontal shell, the arrangement of two independent furnaces, located at its middle, with grate bars running transversely to its length, said furnaces being separated by a water space or "leg," and their products of combustion respectively, passing right and left through flues (preferably small tubes), to chambers, i i, and thence through some proper conduit to their final exit, all substantially as described.

Second, I claim in conjunction with the other general arrangement of the parts of this boiler, the application of a series of auxiliary draft-heating tubes running the entire length of the horizontal shell, from its end to its furnaces respectively, in the manner and for the reason given.

Third, I claim the hollow head or "tonipion," with its conduits for circulation, substantially in the manner and for the purpose described.

Fourth, I claim the application of the sleeve, m m, through the steam drum and chimney, for the objects described.

49,200.—Flour Sifter.—George W. Tileston (assignor to Asa Wilmot) New Haven, Conn.:

I claim as a new article of manufacture, a flour or meal sifter, consisting of a curvilinear vibrating sieve, and a crushing or pulverizing roller, when the whole is constructed and fitted to produce the result, substantially as herein described.

49,201.—Composition for Paint.—James C. Wendrem, Albany, N. Y.. assignor to Wheeler, Mellick & Co., Albany, N. Y., and Edward Wackerhagen, Greenville, N. Y.:

I claim the composition specified for mixing with pigments to form a paint.

49,202.—Barrel for Holding Petroleum.—George W. Williamson, Gouldsborough, Pa., assignor to himself and D. W. Lee, Wilkesbarre, Pa.:

I claim, First, Filling the space between double barrels, designed to contain petroleum or other volatile fluids, with a solution composed of water, chalk or its equivalent, substantially as described.

Second, With a solution composed of water and chalk or other mineral equivalents.

Third, With a solution composed of water and glue or other glutinous equivalent.

49,203.—Machine for Refitting Stop Valves.—Samuel Wing, Monson, Mass., assignor to himself and George R. Topliff, Brooklyn, N. Y.:

I claim, First, The concave mill, B, provided with an internal yielding center, c, and arranged in suitable bearings, a, in combination with the adjustible center, C, constructed and operating substantially a and for the purpose set forth.

Second, The guide, E, and conical mill, D, applied in combination with each other, substantially as and for the purpose described.

49,204.—Cultivator and Planter.—E. M. Wright (assignor to himself and A. C. Diboll) Wilmington, Ohio:

I claim, First, The construction and arrangement of the under cultivator frames, composed respectively of long central beams, D D, fixed but adjustable in position and of short side pieces or beams, E E, hinged and movable or adjustable to and from the said central beams, substantially as and for the purposes herein specified.

Second, I also claim the governing wheel, o, arranged and operating substantially as and for the purpose herein specified.

Third, I also claim the combination of the governing wheel, o, and the side pieces or beams, E E, of the under frames, through the means of the levers, Q Q, connecting bars, p p, rods or bars, F P, all substantially as herein described.

Fourth, I also claim operating the seed-dropping wheels, U U, by the governing wheel, O, under the control of the driver, by means of the lever-armed rock shaft, S, and flexible connecting rods, s s and t t, or their equivalents, substantially as herein specified.

Fifth, I also claim the projecting ledge, v, in the spiral seed separator, substantially as and for the purpose herein set forth.

Sixth, I also claim the friction plate, r, between the brush, w', and its fastening wedge, for the purpose specified.

Seventh, I also claim the construction of the drill teeth or shovels, with sockets or mortises fitting over their standards, for the purpose specified.

49,205.—Machine for Hulling Grain.—Christophe Ours Bullot (assignor to Bullot & Company), Santa Rosa de los Andes, Chili:

I claim the decorticating apparatus herein described, the same consisting of the grinding disks, G L, feeding screw, E, fans, M P, and air pipes or conductors, N O, arranged to operate in the manner described.

[This invention consists in subjecting the corn or other grain to be decorticated to the influence of moisture for a few minutes previous to exposing the same to the decorticating apparatus, which is composed of two pairs of wooden grinding disks; the grinding surface of the first being covered over with wire gauze, and the other with leather or other flexible material, and those of the second pair being covered with leather or other flexible material only, in combination with suitable conduits and fanblowers.]

49,206.—Suspended.

49,207.—Lock for Satchel.—Bernard Steinmetz, Paris, France:

I claim the arrangement of a spring lever, D, in combination with a tumbling bolt, V, acted upon by a spring, s, and operated by means of a key, when combined with the jaw frames of a carpet bag, satchel, etc., and operating in the manner and for the purpose substantially as described and set forth.

49,208.—Wrench.—James White, Cleveland, Ohio:

I claim the stop, L, operating as described, in combination with the disk, F, and adjustable jaws of the wrench, whereby they can be used at any desirable angle, and in either way, without removing the wrench from the nut, as specified.

REISSUES.

2,040.—Box for Hats and Bonnets.—Oliver A. Dailey, Washington, D. C. Patented March 14, 1865:

I claim a hat box made of paper, cloth, leather, or the equivalent thereof, with respect to lightness, and strengthened by the use of ribs, substantially as described.

2,041.—Seed Coverer for Grain Drills.—John S. Gage, Dowagiac, Mich. Patented Aug. 26, 1862:

I claim, First, The seed coverer as herein described, constructed with two concave or converging arched palms, a a, which are shaped on their rear and bottom edges as represented, and are connected by an intermediate portion, e, so as to have a space, b, between them, the said coverer being made of one piece of metal only, and adapted to be applied to the nearly horizontal arms, A A, of the seeding machines, so as to operate upon the sides and top of the ridge or row, as herein specified.

Second, Providing the coverer with a lug, c, adapted to receive a weight, substantially as described.

2,042.—Tackle Hook.—Joseph W. Norcross, Middletown, Conn.:

I claim the strap or brace, B, which forms the upper section of the lower eye of the hook, A, and is made to swivel on the neck of said hook, and connected to its points, substantially in the manner and for the purposes set forth.

2,043.—Lightning Arrester for Telegraphs.—George A. Stearns, Roehester, N. Y. Patented June 21, 1864:

I claim the protection of electric telegraph lines from the disturbing influences of atmospheric electricity by means of a small, fine guard-wire, inserted in the main or line circuit thereof, in such a manner as to complete said circuit, when such guard wire is used in combination with a metallic surface or with a series of metallic points, connected with the earth and placed in close proximity to the line at or in advance of said guard wire, all substantially in the manner herein set forth.

I claim also establishing communication between the main or line circuit of an electric telegraph and the earth, for the discharge of atmospheric electricity from the line by the use of charcoal, powdered glass, powderedamber, sulphur or other equivalent substances brought into contact with said line and connected with the ground, substantially in the manner herein set forth.

2,044.—Machine for Sheeting Plug Tobacco.—W. J. Van Horn and Wm. Alexander, Louisiana, Mo. Patented December 27, 1859:

First, We claim the combination and arrangement of the two belts, C and G, or their equivalents, with a cylinder, B, and a series of pressing rollers, F, arranged and operating substantially as and for the purposes herein specified and shown.

Second, We claim in combination with said cylinder, pressing rollers and belts C G, the employment of the feeding table, J, all arranged and operating substantially as shown and described.

Third, We claim the employment of the rollers, L L, provided with the circular knives, a, and the corresponding channels or grooves, substantially as and for the purposes deliniated and described.

Fourth, We claim the employment of the rollers, M M, provided with the longitudinal cutters, N, arranged and operating as and for the purposes set forth.

Fifth We claim the combination and arrangement of the two pairs of rollers, L and M, provided respectively with the cutters, a and N, arranged and opreating substantially as and for the purposes herein set forth and shown.

Fifth, We claim the combination and arrangement of the cylinder, B, rollers, F, table, J, belts, C, G, cutting rollers, L and M, constructed and operating substantially as and for the purposes herein specified and described.

2,045.—Sawing Machine.—A. E. and J. V. Warner, Norwalk, Ohio. Patented May 30, 1865:

We claim the above-described arrangement of operating a circular saw, in combination with a cross-cut saw, or separately, substantially as and for the purposes set forth.

2,046.—Skeleton Skirt.—S. H. Doughty, Clinton Township, N. J., assignee by mesne assignments of Jas. Draper. Patented Oct. 4, 1859. Reissued Dec. 27, 1859:

I claim the new manufacture of skeleton skirt, substantially as described, consisting of a series of tapes woven in the direction of their length, in alternate sections, as single and as double tapes, with the hoops inserted in the loops formed by wearing the tapes as double tapes, and there secured to prevent the tapes from sliding laterally on the hoops.

JULY 25.

2,034.—Turndown enameled Paper Collar.—James H. Hoffman, New York City. Patented Jan. 24, 1855:

I claim the new article of manufacture consisting of a turndown or folded enameled paper collar, substantially as described.

2,035.—Carpet Bag Frame.—Samuel Lagowitz, New York City. Patented July 7, 1863:

I claim the cover, B, made of elastic wood and attached to one end of the jaws, A, by stays or brackets, all as herein shown and described.

2,036.—House for Preserving Fruit, Etc.—Benjamin M. Nyce, Cleveland, Ohio. Patented November 2, 1858. Reissued October 23, 1860; again May 16, 1865:

I claim the insulated and cooled preserving chamber, J, provided with absorbents of moisture, substantially as set forth, either with or without the agitator, K.

2,037.—Preserving Fruit and other Perishable Substances.—Benjamin M. Nyce, Cleveland, Ohio. Patented November 2, 1858. Reissued October 23, 1860; again May 16, 1865:

I claim the method of preserving fruit in a chamber whose walls, doors and floors are practically air tight, and so proof against the ingress of heat and moisture, as to maintain by the aid of ice, on a metal floor above a uniform temperature of from 34° to 37° F., throughout the year, and by the use of absolvents within said chamber producing any desired degree of dryness.

2,038.—Preserving Fruit and Other Perishable Substances.—Benjamin M. Nyce, Cleveland, Ohio. Patented November 2, 1858. Reissued October 23, 1860; again May 16, 1865:

I claim the above described outside air tight casings of walls, when used in combination with a chamber chilled by ice on a metallic floor, on its upper part, with absorbents of moisture, within said chamber.

2,039.—Steam Engine Governor.—Thomas Silver, New York City. Patented April 26, 1859:

I claim the combination of a spring with a momentum wheel, and adjustable speed limiting vanes, the whole constructed with the combination of the peculiarly adjusted sectors, pinion and links, as fully described and set forth.

DESIGNS.

2,149.—Bass Relief for Bust of Abraham Lincoln.—Elizabeth V. Bunting, Philadelphia, Pa.

2,150.—Stove.—Gardner Chilson, Boston, Mass.

2,151.—Trade Mark.—D. L. Gold and J. B. Adams, Springfield, Ill.

2,152.—Carpet Pattern.—E. J. Ney (assignor to the Lowell Manufacturing Co.), Lowell, Mass.

2,153.—Plate or a Cook Stove.—Garrettson Smith and Henry Brown, Philadelphia, Pa., assignors to Marshbank & McConkey, Lancaster, Pa.

2,154, 2,155.—Stove Base.—N. S. Vedder (assignor to Cox, Church & Co.), Troy, N. Y. Two Patents.

2,156.—Cook Stove.—N. S. Vedder (assignor to Cox, Church & Co.), Troy, N. Y.

2,157.—Top of a Stove.—N. S. Vedder (assignor to Cox, Church & Co.), Troy, N. Y.

2,158.—Cook Stove.—Russell Wheeler and S. A. Bailey, Utica, N. Y.

PATENTS

GRANTED

FOR SEVENTEEN YEARS.

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[See Judge Holt's letter on another page.]

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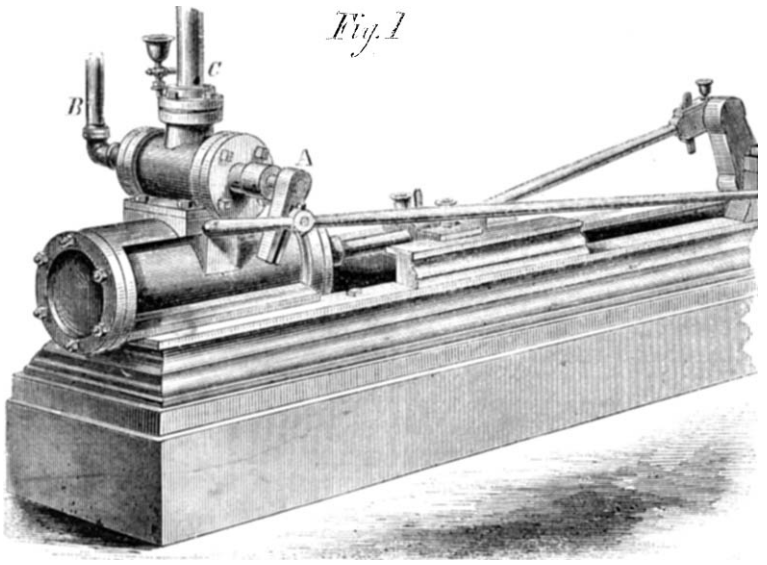
Fig. 1



CARHART'S OSCILLATING STEAM VALVE.

Fig. 1 represents an engine with the valve attached. This engine formerly had on a slide valve. No alteration has been made in the cylinder or valve seat. There are flanges cast on the under side of the valve socket, whereby it is bolted to the old valve seat. The arm, A, attached to the valve stem takes the eccentric rod by which the valve is worked. The position of the pin in which the rod hooks may be varied by means ot a slot in the arm, thus varying the oscillation of the valve. B is the steam, and C is the exhaust pipe.

Fig. 2

Fig. 3

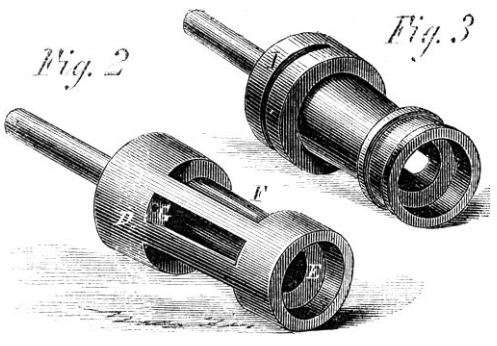


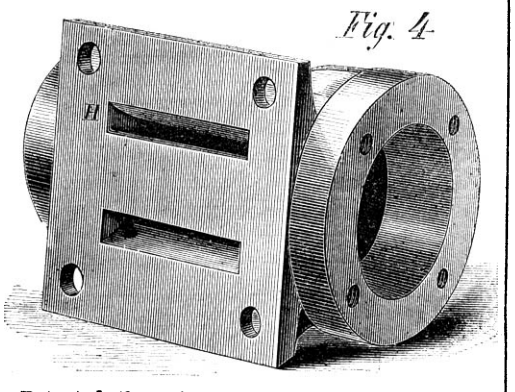
Fig. 2 represents the valve isolated, chiefly to show the opening, D, which communicates alternately with corresponding openings in the valve-chest, leading to the opposite ends of the cylinder. Steam is admitted at E; the valve being cast hollow communicates alternately with the opposite ends of the cylinder through D, and exhausts over the valve, at F.

The valve is made tapering, so as to wear to a fit. It is held in place by steam pressure, and is without a set-screw; there is not a screw or bolt exposed to the action of the steam. The steam passes through the small opening at G, into a thin chamber at the head of the valve, made by a washer being slipped on to the stem. The area of this end being greater than that of the opposite end, the pressure is just enough greater to hold the valve in its place. The washer not fitting steam-tight, there is allowance made for expansion of the valve, to prevent it sticking, as it would be liable to do with a set-screw.

Fig. 3 shows the upper, or exhaust side ot the valve, and the recess, I, for the purpose of counterbalancing the upward pressure of the valve. There are small openings admitting the steam from the inside of the valve to these recesses. If the sum of the area of both these recesses exactly corresponds to the area of the main opening in the underside of the valve, it is evident that the valve will be balanced. It is found on actual experiment that the valve works as easy under pressure, the surfaces being exactly right, as it does without any pressure. The valve on a six-horse power engine, at work under sixty-five pounds of steam, was worked with the thumb and finger.

Fig. 4 shows the under side of the valve chest, the flanges with bolt holes, and more particularly the openings, H H, which communicate with openings leading to opposite ends of the cylinder.

Fig. 4.



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